



49321-142 SEQ LIST.txt  
SEQUENCE LISTING

<110> Moses, Ashlee  
Frueh, Klaus  
King, Jeffrey S.  
Hicks, James B.  
Raggo, Camilo  
Nelson, Jay

<120> METHODS OF TREATMENT AND DIAGNOSIS OF KAPOSI'S SARCOMA (KS) AND KS RELATED DISEASES

<130> 49321-142

<140> US 10/541,598  
<141> 2005-07-05

<150> US 60/438,343  
<151> 2003-01-06

<150> US 60/473,246  
<151> 2003-05-22

<150> PCT US04/00320  
<151> 2004-01-06

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<170> PatentIn version 3.3

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cgaggtcat ttgattgccc gcctcagaac g atg gat ctg cat ctc ttc gac 172  
Met Asp Leu His Leu Phe Asp  
1 5

tac tca gag cca ggg aac ttc tcg gac atc agc tgg cca tgc aac agc 220  
Tyr Ser Glu Pro Gly Asn Phe Ser Asp Ile Ser Trp Pro Cys Asn Ser  
10 15 20

agc gac tgc atc gtg gtg gac acg gtg atg tgt ccc aac atg ccc aac 268  
Ser Asp Cys Ile Val Val Asp Thr Val Met Cys Pro Asn Met Pro Asn  
25 30 35

aaa agc gtc ctg ctc tac acg ctc tcc att tac att ttc atc ttc 316  
Lys Ser Val Leu Leu Tyr Thr Leu Ser Phe Ile Tyr Ile Phe Ile Phe

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gcc aag acc aca ggc tat gac acg cac tgc tac atc ttg aac ctg gcc Ala Lys Thr Thr Gly Tyr Asp Thr His Cys Tyr Ile Leu Asn Leu Ala	75	80	85	412
att gcc gac ctg tgg gtt gtc ctc acc atc cca gtc tgg gtg gtc agt Ile Ala Asp Leu Trp Val Val Leu Thr Ile Pro Val Trp Val Val Ser	90	95	100	460
ctc gtg cag cac aac cag tgg ccc atg ggc gag ctc acg tgc aaa gtc Leu Val Gln His Asn Gln Trp Pro Met Gly Glu Leu Thr Cys Lys Val	105	110	115	508
aca cac ctc atc ttc tcc atc aac ctc ttc ggc agc att ttc ttc ctc Thr His Leu Ile Phe Ser Ile Asn Leu Phe Gly Ser Ile Phe Phe Leu	120	125	130	135
acg tgc atg agc gtg gac cgc tac ctc tcc atc acc tac ttc acc aac Thr Cys Met Ser Val Asp Arg Tyr Leu Ser Ile Thr Tyr Phe Thr Asn	140	145	150	604
acc ccc agc agc agg aag aag atg gta cgc cgt gtc gtc tgc atc ctg Thr Pro Ser Ser Arg Lys Lys Met Val Arg Arg Val Val Cys Ile Leu	155	160	165	652
gtg tgg ctg ctg gcc ttc tgc gtg tct ctg cct gac acc tac tac ctg Val Trp Leu Leu Ala Phe Cys Val Ser Leu Pro Asp Thr Tyr Tyr Leu	170	175	180	700
aag acc gtc acg tct gcg tcc aac aat gag acc tac tgc cgg tcc ttc Lys Thr Val Thr Ser Ala Ser Asn Asn Glu Thr Tyr Cys Arg Ser Phe	185	190	195	748
tac ccc gag cac agc atc aag gag tgg ctg atc ggc atg gag ctg gtc Tyr Pro Glu His Ser Ile Lys Glu Trp Leu Ile Gly Met Glu Leu Val	200	205	210	796
tcc gtt gtc ttg ggc ttt gcc gtt ccc ttc tcc att atc gct gtc ttc Ser Val Val Leu Gly Phe Ala Val Pro Phe Ser Ile Ile Ala Val Phe	220	225	230	844
tac ttc ctg ctg gcc aga gcc atc tcg gcg tcc agt gac cag gag aag Tyr Phe Leu Leu Ala Arg Ala Ile Ser Ala Ser Ser Asp Gln Glu Lys	235	240	245	892
cac agc agc cgg aag atc atc ttc tcc tac gtg gtg gtc ttc ctt gtc His Ser Ser Arg Lys Ile Ile Phe Ser Tyr Val Val Val Phe Leu Val	250	255	260	940
tgc tgg ctg ccc tac cac gtg gcg gtg ctg gac atc ttc tcc atc Cys Trp Leu Pro Tyr His Val Ala Val Leu Leu Asp Ile Phe Ser Ile	265	270	275	988
ctg cac tac atc cct ttc acc tgc cgg ctg gag cac gcc ctc ttc acg				1036

## 49321-142 SEQ LIST.txt

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gcc ctg cat gtc aca cag tgc ctg tcg gtg cac tgc tgc qtc aac				1084
Ala Leu His Val Thr Gln Cys Leu Ser Leu Val His Cys Cys Val Asn				
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cct gtc ctc tac agc ttc atc aat cgc aac tac agg tac gag ctg atg				1132
Pro Val Leu Tyr Ser Phe Ile Asn Arg Asn Tyr Arg Tyr Glu Leu Met				
315	320	325		
aag gcc ttc atc ttc aag tac tcg gcc aaa aca ggg ctc acc aag ctc				1180
Lys Ala Phe Ile Phe Lys Tyr Ser Ala Lys Thr Gly Leu Thr Lys Leu				
330	335	340		
atc gat gcc tcc aga gtc tca gag acg gag tac tct gcc ttg gag cag				1228
Ile Asp Ala Ser Arg Val Ser Glu Thr Glu Tyr Ser Ala Leu Glu Gln				
345	350	355		
agc acc aaa tga tctgccctgg agaggctctg ggacgggtt acttgttttt				1280
Ser Thr Lys				
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Phe Ile Tyr Ile Phe Ile Phe Val Ile Gly Met Ile Ala Asn Ser Val  
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Val Val Trp Val Asn Ile Gln Ala Lys Thr Thr Gly Tyr Asp Thr His  
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Cys Tyr Ile Leu Asn Leu Ala Ile Ala Asp Leu Trp Val Val Leu Thr  
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Ile Pro Val Trp Val Val Ser Leu Val Gln His Asn Gln Trp Pro Met  
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Gly Glu Leu Thr Cys Lys Val Thr His Leu Ile Phe Ser Ile Asn Leu  
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Phe Gly Ser Ile Phe Phe Leu Thr Cys Met Ser Val Asp Arg Tyr Leu  
130 135 140

Ser Ile Thr Tyr Phe Thr Asn Thr Pro Ser Ser Arg Lys Lys Met Val  
145 150 155 160

Arg Arg Val Val Cys Ile Leu Val Trp Leu Leu Ala Phe Cys Val Ser  
165 170 175

Leu Pro Asp Thr Tyr Tyr Leu Lys Thr Val Thr Ser Ala Ser Asn Asn  
180 185 190

Glu Thr Tyr Cys Arg Ser Phe Tyr Pro Glu His Ser Ile Lys Glu Trp  
195 200 205

Leu Ile Gly Met Glu Leu Val Ser Val Val Leu Gly Phe Ala Val Pro  
210 215 220

Phe Ser Ile Ile Ala Val Phe Tyr Phe Leu Leu Ala Arg Ala Ile Ser  
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Ala Ser Ser Asp Gln Glu Lys His Ser Ser Arg Lys Ile Ile Phe Ser

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Tyr Val Val Val Phe Leu Val Cys Trp Leu Pro Tyr His Val Ala Val  
 260 265 270

Leu Leu Asp Ile Phe Ser Ile Leu His Tyr Ile Pro Phe Thr Cys Arg  
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Leu Glu His Ala Leu Phe Thr Ala Leu His Val Thr Gln Cys Leu Ser  
 290 295 300

Leu Val His Cys Cys Val Asn Pro Val Leu Tyr Ser Phe Ile Asn Arg  
 305 310 315 320

Asn Tyr Arg Tyr Glu Leu Met Lys Ala Phe Ile Phe Lys Tyr Ser Ala  
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Leu Pro Arg Val Gly Cys Pro Ala Leu Pro Leu Pro Pro Pro Leu  
5 10 15

ctg ccg ctg ctg ctg cta ctg ggc gcg agt ggc ggc ggc ggc ggg 213  
Leu Pro Leu Leu Leu Leu Gly Ala Ser Gly Gly Gly Gly Gly  
20 25 30

gcg cgc gcg gag gtg ctg ttc cgc tgc ccg ccc tgc aca ccc gag cgc 261  
Ala Arg Ala Glu Val Leu Phe Arg Cys Pro Pro Cys Thr Pro Glu Arg  
35 40 45

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Leu Ala Ala Cys Gly Pro Pro Pro Val Ala Pro Pro Ala Ala Val Ala	
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gca gtg gcc gga ggc gcc cgc atg cca tgc gcg gag ctc gtc cgag gag	357
Ala Val Ala Gly Gly Ala Arg Met Pro Cys Ala Glu Leu Val Arg Glu	
70 75 80	
ccg ggc tgc ggc tgc tgc tcg gtg tgc gcc ccg ctg gag ggc gag ggc	405
Pro Gly Cys Gly Cys Ser Val Cys Ala Arg Leu Glu Gly Glu Ala	
85 90 95	
tgc ggc gtc tac acc ccg cgc tgc ggc cag ggg ctg cgc tgc tat ccc	453
Cys Gly Val Tyr Thr Pro Arg Cys Gly Gln Gly Leu Arg Cys Tyr Pro	
100 105 110	
cac ccg ggc tcc gag ctg ccc ctg cag gcg ctg gtc atg ggc gag ggc	501
His Pro Gly Ser Glu Leu Pro Leu Gln Ala Leu Val Met Gly Glu Gly	
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act tgt gag aag cgc cgg gac gcc gag tat ggc gcc agc ccg gag cag	549
Thr Cys Glu Lys Arg Arg Asp Ala Glu Tyr Gly Ala Ser Pro Glu Gln	
130 135 140 145	
gtt gca gac aat ggc gat gac cac tca gaa gga ggc ctg gtg gag aac	597
Val Ala Asp Asn Gly Asp Asp His Ser Glu Gly Gly Leu Val Glu Asn	
150 155 160	
cac gtg gac agc acc atg aac atg ttg ggc ggg gga ggc agt gct ggc	645
His Val Asp Ser Thr Met Asn Met Leu Gly Gly Gly Ser Ala Gly	
165 170 175	
cgg aag ccc ctc aag tcg ggt atg aag gag ctg gcc gtg ttc cgg gag	693
Arg Lys Pro Leu Lys Ser Gly Met Lys Glu Leu Ala Val Phe Arg Glu	
180 185 190	
aag gtc act gag cag cac ccg cag atg ggc aag ggt ggc aag cat cac	741
Lys Val Thr Glu Gln His Arg Gln Met Gly Lys Gly Lys His His	
195 200 205	
ctt ggc ctg gag gag ccc aag aag ctg cga cca ccc cct gcc agg act	789
Leu Gly Leu Glu Glu Pro Lys Lys Leu Arg Pro Pro Pro Ala Arg Thr	
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ccc tgc caa cag gaa ctg gac cag gtc ctg gag cgg atc tcc acc atg	837
Pro Cys Gln Gln Glu Leu Asp Gln Val Leu Glu Arg Ile Ser Thr Met	
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Arg Leu Pro Asp Glu Arg Gly Pro Leu Glu His Leu Tyr Ser Leu His	
245 250 255	
atc ccc aac tgt gac aag cat ggc ctg tac aac ctc aaa cag tgc aag	933
Ile Pro Asn Cys Asp Lys His Gly Leu Tyr Asn Leu Lys Gln Cys Lys	
260 265 270	
atg tct ctg aac ggg cag cgt ggg gag tgc tgg tgt gtg aac ccc aac	981
Met Ser Leu Asn Gly Gln Arg Gly Glu Cys Trp Cys Val Asn Pro Asn	

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290	295	300	305
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Cys His Leu Phe Tyr Asn Glu Gln Glu Ala Arg Gly Val His Thr			
310	315	320	
cag cg <sup>g</sup> atg cag tag accgcagcca gccgggtgc <sup>c</sup> ggcgc <sup>c</sup> cctg cccccggccc			1132
Gln Arg Met Gln			
325			
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aagggggttg tggtcgggga gctgggtac aggtttgggg agggggaaaga gaaattttta			1372
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Gly Ala Arg Ala Glu Val Leu Phe Arg Cys Pro Pro Cys Thr Pro Glu  
35              40                           45

Arg Leu Ala Ala Cys Gly Pro Pro Pro Val Ala Pro Pro Ala Ala Val  
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Ala Ala Val Ala Gly Gly Ala Arg Met Pro Cys Ala Glu Leu Val Arg  
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Glu Pro Gly Cys Gly Cys Cys Ser Val Cys Ala Arg Leu Glu Gly Glu  
85              90                           95

Ala Cys Gly Val Tyr Thr Pro Arg Cys Gly Gln Gly Leu Arg Cys Tyr  
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49321-142 SEQ LIST.txt

Pro His Pro Gly Ser Glu Leu Pro Leu Gln Ala Leu Val Met Gly Glu  
115 120 125

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130 135 140

Gln Val Ala Asp Asn Gly Asp Asp His Ser Glu Gly Gly Leu Val Glu  
145 150 155 160

Asn His Val Asp Ser Thr Met Asn Met Leu Gly Gly Gly Ser Ala  
165 170 175

Gly Arg Lys Pro Leu Lys Ser Gly Met Lys Glu Leu Ala Val Phe Arg  
180 185 190

Glu Lys Val Thr Glu Gln His Arg Gln Met Gly Lys Gly Gly Lys His  
195 200 205

His Leu Gly Leu Glu Glu Pro Lys Lys Leu Arg Pro Pro Pro Ala Arg  
210 215 220

Thr Pro Cys Gln Gln Glu Leu Asp Gln Val Leu Glu Arg Ile Ser Thr  
225 230 235 240

Met Arg Leu Pro Asp Glu Arg Gly Pro Leu Glu His Leu Tyr Ser Leu  
245 250 255

His Ile Pro Asn Cys Asp Lys His Gly Leu Tyr Asn Leu Lys Gln Cys  
260 265 270

Lys Met Ser Leu Asn Gly Gln Arg Gly Glu Cys Trp Cys Val Asn Pro  
275 280 285

Asn Thr Gly Lys Leu Ile Gln Gly Ala Pro Thr Ile Arg Gly Asp Pro  
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Glu Cys His Leu Phe Tyr Asn Glu Gln Gln Glu Ala Arg Gly Val His  
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Thr Gln Arg Met Gln  
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 Arg Pro Gly Trp Leu Ala Leu Leu Trp Val Ser Ala Leu Ser Cys  
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 Ser Phe Ser Leu Pro Ala Ser Ser Leu Ser Ser Leu Val Pro Gln Val  
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 aga acc agc tac aat ttt gga agg act ttc ctc ggt ctt gat aaa tgc 255  
 Arg Thr Ser Tyr Asn Phe Gly Arg Thr Phe Leu Gly Leu Asp Lys Cys  
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 aat gcc tgc atc ggg aca tct att tgc aag aag ttc ttt aaa qaa gaa 303  
 Asn Ala Cys Ile Gly Thr Ser Ile Cys Lys Lys Phe Phe Lys Glu Glu  
               65               70                   75  
 ata aga tct gac aac tgg ctg gct tcc cac ctt gga ctg cct ccc gat 351  
 Ile Arg Ser Asp Asn Trp Leu Ala Ser His Leu Gly Leu Pro Pro Asp  
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 Arg Pro Val Glu Ile Phe Arg Leu Val Ser Lys Tyr Gln Asn Glu Ile  
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 Ser Asp Arg Lys Ile Cys Ala Ser Ala Ser Ala Pro Lys Thr Cys Ser  
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 att gag cgt gtc ctg cgg aaa aca gag agg ttc cag aaa tgg ctg cag 543  
 Ile Glu Arg Val Leu Arg Lys Thr Glu Arg Phe Gln Lys Trp Leu Gln  
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49321-142 SEQ LIST.txt

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49321-142 SEQ LIST.txt

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35 40 45

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50 55 60

Gly Thr Ser Ile Cys Lys Lys Phe Phe Lys Glu Glu Ile Arg Ser Asp  
65 70 75 80

Asn Trp Leu Ala Ser His Leu Gly Leu Pro Pro Asp Ser Leu Leu Ser  
85 90 95

Tyr Pro Ala Asn Tyr Ser Asp Asp Ser Lys Ile Trp Arg Pro Val Glu  
100 105 110

Ile Phe Arg Leu Val Ser Lys Tyr Gln Asn Glu Ile Ser Asp Arg Lys  
115 120 125

Ile Cys Ala Ser Ala Ser Ala Pro Lys Thr Cys Ser Ile Glu Arg Val  
130 135 140

Leu Arg Lys Thr Glu Arg Phe Gln Lys Trp Leu Gln Ala Lys Arg Leu  
145 150 155 160

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## 49321-142 SEQ LIST.txt

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 Met Ser Lys Leu  
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 aca tta tcc gaa ggc cat ccg gaa acg cca gtt gat ggg gac cta ggg 222  
 Thr Leu Ser Glu Gly His Pro Glu Thr Pro Val Asp Gly Asp Leu Gly  
 5 10 15 20  
 aag caa gat atc tgc tca tct gaa gcc tcg tgg ggt gat ttt gaa tat 270  
 Lys Gln Asp Ile Cys Ser Ser Glu Ala Ser Trp Gly Asp Phe Glu Tyr  
 25 30 35  
 gat gta atg ggc cag aat atc gat gaa gat tta ctg aga gag cct gaa 318  
 Asp Val Met Gly Gln Asn Ile Asp Glu Asp Leu Leu Arg Glu Pro Glu  
 40 45 50  
 cac ttc ctg tat ggt ggt gac cct cct ttg gag gaa gat tct ctg aag 366  
 His Phe Leu Tyr Gly Gly Asp Pro Pro Leu Glu Glu Asp Ser Leu Lys  
 55 60 65  
 cag tcg ctg gca ccg tac aca cct ccc ttt gat ttg tct tat ctc aca 414  
 Gln Ser Leu Ala Pro Tyr Thr Pro Pro Phe Asp Leu Ser Tyr Leu Thr  
 70 75 80  
 gaa cct gcc cag agt gct gaa aca ata gag gaa gct ggg tct cca gag 462  
 Glu Pro Ala Gln Ser Ala Glu Thr Ile Glu Glu Ala Gly Ser Pro Glu  
 85 90 95 100  
 gat gaa tct ctg gga tgc aga gca gca gag ata gtg ctt tct gca ctt 510  
 Asp Glu Ser Leu Gly Cys Arg Ala Ala Glu Ile Val Leu Ser Ala Leu  
 105 110 115  
 cct gat cga aga agt gag gga aac cag gct gag acc aaa aac aga ctg 558  
 Pro Asp Arg Arg Ser Glu Gly Asn Gln Ala Glu Thr Lys Asn Arg Leu  
 120 125 130  
 cct gga tcc cag ctg gct gtg ctg cat att cgt gaa gac cct gag tcc 606  
 Pro Gly Ser Gln Leu Ala Val Leu His Ile Arg Glu Asp Pro Glu Ser  
 135 140 145  
 gtt tat ttg ccg gta gga gca ggc tcc aac att ttg tct cca tca aac 654  
 Val Tyr Leu Pro Val Gly Ala Gly Ser Asn Ile Leu Ser Pro Ser Asn  
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49321-142 SEQ LIST.txt

gtt gac tgg gaa gta gaa aca gat aat tct gat tta cca gca ggt gga Val Asp Trp Glu Val Glu Thr Asp Asn Ser Asp Leu Pro Ala Gly Gly 165 170 175 180	702
gac ata gga cca cca aat ggt gcc agc aag gaa ata tca gaa ttg gaa Asp Ile Gly Pro Pro Asn Gly Ala Ser Lys Glu Ile Ser Glu Leu Glu 185 190 195	750
gaa gaa aaa aca att cct acc aaa gag cct gag cag ata aaa tca gaa Glu Glu Lys Thr Ile Pro Thr Lys Glu Pro Glu Gln Ile Lys Ser Glu 200 205 210	798
tac aag gaa gaa aga tgt aca gag aag aat gaa gat cgt cat gca cta Tyr Lys Glu Glu Arg Cys Thr Glu Lys Asn Glu Asp Arg His Ala Leu 215 220 225	846
cac atg gat tac ata ctt gta aac cgt gaa gaa aat tca cac tca aag His Met Asp Tyr Ile Leu Val Asn Arg Glu Glu Asn Ser His Ser Lys 230 235 240	894
cca gag acc tgt gaa gaa aga gaa agc ata gct gaa tta gaa ttg tat Pro Glu Thr Cys Glu Glu Arg Glu Ser Ile Ala Glu Leu Glu Leu Tyr 245 250 255 260	942
gta ggt tcc aaa gaa aca ggg ctg cag gga act cag tta gca agc ttc Val Gly Ser Lys Glu Thr Gly Leu Gln Gly Thr Gln Leu Ala Ser Phe 265 270 275	990
cca gac aca tgt cag cca gcc tcc tta aat gaa aga aaa ggt ctc tct Pro Asp Thr Cys Gln Pro Ala Ser Leu Asn Glu Arg Lys Gly Leu Ser 280 285 290	1038
gca gag aaa atg tct tct aaa agc gat acg aga tca tct ttt gaa agc Ala Glu Lys Met Ser Ser Lys Ser Asp Thr Arg Ser Ser Phe Glu Ser 295 300 305	1086
cct gca caa gac cag agt tgg atg ttc ttg ggc cat agt gag gtt ggt Pro Ala Gln Asp Gln Ser Trp Met Phe Leu Gly His Ser Glu Val Gly 310 315 320	1134
gat cca tca ctg gat gcc agg gac tca ggg cct ggg tgg tct ggc aag Asp Pro Ser Leu Asp Ala Arg Asp Ser Gly Pro Gly Trp Ser Gly Lys 325 330 335 340	1182
act gtg gag ccg ttc tct gaa ctc ggc ttg ggt gag ggt ccc cag ctg Thr Val Glu Pro Phe Ser Glu Leu Gly Leu Gly Glu Gly Pro Gln Leu 345 350 355	1230
cag att ctg gaa gaa atg aag cct cta gaa tct ttg gca cta gag gaa Gln Ile Leu Glu Met Lys Pro Leu Glu Ser Leu Ala Leu Glu Glu 360 365 370	1278
gcc tct ggt cca gtc agc caa tca cag aag agt aag agc cga ggc agg Ala Ser Gly Pro Val Ser Gln Ser Gln Lys Ser Lys Ser Arg Gly Arg 375 380 385	1326
gct ggc ccg gat gca gtt acg ttg cag gct gtc acc cat gac aat gaa Ala Gly Pro Asp Ala Val Thr Leu Gln Ala Val Thr His Asp Asn Glu 390 395 400	1374

49321-142 SEQ LIST.txt

tgg gaa atg ctt tca cca cag cct gtt cag aaa aac atg atc cct gac Trp Glu Met Leu Ser Pro Gln Pro Val Gln Lys Asn Met Ile Pro Asp 405 410 415 420	1422
acg gaa atg gag gag aca gag ttc ctt gag ctc gga acc agg ata Thr Glu Met Glu Glu Thr Glu Phe Leu Glu Leu Gly Thr Arg Ile 425 430 435	1470
tca aga cca aat gga cta ctg tca gag gat gta gga atg gac atc ccc Ser Arg Pro Asn Gly Leu Leu Ser Glu Asp Val Gly Met Asp Ile Pro 440 445 450	1518
ttt gaa gag ggc gtg ctg agt ccc agt gct gca gac atg agg cct gaa Phe Glu Glu Gly Val Leu Ser Pro Ser Ala Ala Asp Met Arg Pro Glu 455 460 465	1566
cct cct aat tct ctg gat ctt aat gac act cat cct cggtt gaa atc aag Pro Pro Asn Ser Leu Asp Leu Asn Asp Thr His Pro Arg Arg Ile Lys 470 475 480	1614
ctc aca gcc cca aat atc aat ctt tct ctg gac caa agt gaa gga tct Leu Thr Ala Pro Asn Ile Asn Leu Ser Leu Asp Gln Ser Glu Gly Ser 485 490 495 500	1662
att ctc tct gat gat aac ttg gac agt cca gat gaa att gac atc aat Ile Leu Ser Asp Asp Asn Leu Asp Ser Pro Asp Glu Ile Asp Ile Asn 505 510 515	1710
tggtt gat gaa ctt gat acc ccc gat gaa gca gat tct ttt gag tac act Val Asp Glu Leu Asp Thr Pro Asp Glu Ala Asp Ser Phe Glu Tyr Thr 520 525 530	1758
ggc cat gat ccc aca gcc aac aaa gat tct ggc caa gag tca gag tct Gly His Asp Pro Thr Ala Asn Lys Asp Ser Gly Gln Glu Ser Glu Ser 535 540 545	1806
att cca gaa tat acg gcc gaa gag gaa cgg gag gac aac cgg ctt tgg Ile Pro Glu Tyr Thr Ala Glu Glu Arg Glu Asp Asn Arg Leu Trp 550 555 560	1854
agg aca gtg gtc att gga gaa caa gag cag cgc att gac atg aag gtc Arg Thr Val Val Ile Gly Glu Gln Glu Gln Arg Ile Asp Met Lys Val 565 570 575 580	1902
atc gag ccc tac agg aga gtc att tct cac gga gga tac tat ggg gac Ile Glu Pro Tyr Arg Arg Val Ile Ser His Gly Gly Tyr Tyr Gly Asp 585 590 595	1950
ggt cta aat gcc atc att gtg ttt gcc gcc tgt ttt ctg cca gac agc Gly Leu Asn Ala Ile Ile Val Phe Ala Ala Cys Phe Leu Pro Asp Ser 600 605 610	1998
agt cgg gcg gat tac cac tat gtc atg gaa aat ctt ttc cta tat gta Ser Arg Ala Asp Tyr His Tyr Val Met Glu Asn Leu Phe Leu Tyr Val 615 620 625	2046
ata agt act tta gag ttg atg gta gct gaa gac tat atg att gtg tac Ile Ser Thr Leu Glu Leu Met Val Ala Glu Asp Tyr Met Ile Val Tyr	2094

## 49321-142 SEQ LIST.txt

630	635	640	
ttg aat ggt gca acc cca aga agg agg atg cca ggg cta ggc tgg atg Leu Asn Gly Ala Thr Pro Arg Arg Arg Met Pro Gly Leu Gly Trp Met	645	650	2142
aag aaa tgc tac cag atg att gac aga cg <sup>g</sup> ttg agg aag aat ttg aaa Lys Lys Cys Tyr Gln Met Ile Asp Arg Arg Leu Arg Lys Asn Leu Lys	665	670	2190
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tca ttc atc att gtt cat cca tct tgg ttc atc aga aca atc ctt gct Ser Phe Ile Ile Val His Pro Ser Trp Phe Ile Arg Thr Ile Leu Ala	680	685	2238
690			
gtg aca cga cct ttt ata agt tca aaa ttc agc agt aaa att aaa tat Val Thr Arg Pro Phe Ile Ser Ser Lys Phe Ser Ser Lys Ile Lys Tyr	695	700	2286
705			
gtc aat agc tta tca gaa ctc agt ggg ctg atc cca atg gat tgc atc Val Asn Ser Leu Ser Glu Leu Ser Gly Leu Ile Pro Met Asp Cys Ile	710	715	2334
720			
cac att cca gag agc atc atc aaa ctg gat gaa gaa ctg agg gaa gca His Ile Pro Glu Ser Ile Ile Lys Leu Asp Glu Glu Leu Arg Glu Ala	725	730	2382
735			
740			
tca gag gca gct aaa act agc tgc ctt tac aat gat cca gaa atg tct Ser Glu Ala Ala Lys Thr Ser Cys Leu Tyr Asn Asp Pro Glu Met Ser	745	750	2430
755			
tct atg gag aag gat att gac ttg aag ctg aaa gaa aag cct tag Ser Met Glu Lys Asp Ile Asp Leu Lys Leu Lys Glu Lys Pro	760	765	2475
770			
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tttttagttgt caaattgggc attatatttt atgtaaattt gtcttttaac atcattttcc			3135
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49321-142 SEQ LIST.txt

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taaaattaaa tatgagtatt actttcatgt acaaaatatt tcctttagt tcttcataatg	3435
ccctttaaaa tgccaacaag atttcaagtc tgtaggcctc tagtgagggtg gggtggcaaa	3495
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ccactctgat atttaggtat ctgtatattt attatcttaa aagacaaaatt aatttaattt	4935
catgtgctag ggaaaagcta ccatgtacat tcaccccaag taaatagaat cctagatgaa	4995

49321-142 SEQ LIST.txt

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ctctctagct ctgcactct gaacattctt gctttgggtc tgacttctgg gaactgcttt	5115
gcatttctcc tatagatctg tagttaaggg aaccaagggg tcattggggc aaaagcattg	5175
tttctcaaag ctccttgatt aagagaaaga acagaaattt gcacagaaga tagtgtcaag	5235
gagtgagaaa gtttggta gggcagtagc tcagtgtgga agaaaatcct gaagttctg	5295
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tttgcactc tcgtcttatac acaatgcctc agtagttgt tcccttagaa acatttagat	5475
gtgcacaaat taatcttta tatactaaa gggtttcta tcatgcattt gattgctcag	5535
aataaaagtgt ctgttagact tcgtttggt aaataaatttcc tccataatgt agattaataa	5595
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aaattgattc tgc	5668

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<212> PRT  
<213> homo sapiens

<400> 8

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Gly Asp Leu Gly Lys Gln Asp Ile Cys Ser Ser Glu Ala Ser Trp Gly  
20               25   30

Asp Phe Glu Tyr Asp Val Met Gly Gln Asn Ile Asp Glu Asp Leu Leu  
35               40   45

Arg Glu Pro Glu His Phe Leu Tyr Gly Gly Asp Pro Pro Leu Glu Glu  
50               55   60

Asp Ser Leu Lys Gln Ser Leu Ala Pro Tyr Thr Pro Pro Phe Asp Leu  
65               70   75                           80

Ser Tyr Leu Thr Glu Pro Ala Gln Ser Ala Glu Thr Ile Glu Glu Ala  
85               90   95

Gly Ser Pro Glu Asp Glu Ser Leu Gly Cys Arg Ala Ala Glu Ile Val  
100              105   110

49321-142 SEQ LIST.txt

Leu Ser Ala Leu Pro Asp Arg Arg Ser Glu Gly Asn Gln Ala Glu Thr  
115 120 125

Lys Asn Arg Leu Pro Gly Ser Gln Leu Ala Val Leu His Ile Arg Glu  
130 135 140

Asp Pro Glu Ser Val Tyr Leu Pro Val Gly Ala Gly Ser Asn Ile Leu  
145 150 155 160

Ser Pro Ser Asn Val Asp Trp Glu Val Glu Thr Asp Asn Ser Asp Leu  
165 170 175

Pro Ala Gly Gly Asp Ile Gly Pro Pro Asn Gly Ala Ser Lys Glu Ile  
180 185 190

Ser Glu Leu Glu Glu Glu Lys Thr Ile Pro Thr Lys Glu Pro Glu Gln  
195 200 205

Ile Lys Ser Glu Tyr Lys Glu Glu Arg Cys Thr Glu Lys Asn Glu Asp  
210 215 220

Arg His Ala Leu His Met Asp Tyr Ile Leu Val Asn Arg Glu Glu Asn  
225 230 235 240

Ser His Ser Lys Pro Glu Thr Cys Glu Glu Arg Glu Ser Ile Ala Glu  
245 250 255

Leu Glu Leu Tyr Val Gly Ser Lys Glu Thr Gly Leu Gln Gly Thr Gln  
260 265 270

Leu Ala Ser Phe Pro Asp Thr Cys Gln Pro Ala Ser Leu Asn Glu Arg  
275 280 285

Lys Gly Leu Ser Ala Glu Lys Met Ser Ser Lys Ser Asp Thr Arg Ser  
290 295 300

Ser Phe Glu Ser Pro Ala Gln Asp Gln Ser Trp Met Phe Leu Gly His  
305 310 315 320

Ser Glu Val Gly Asp Pro Ser Leu Asp Ala Arg Asp Ser Gly Pro Gly  
325 330 335

Trp Ser Gly Lys Thr Val Glu Pro Phe Ser Glu Leu Gly Leu Gly Glu  
340 345 350

49321-142 SEQ LIST.txt

Gly Pro Gln Leu Gln Ile Leu Glu Glu Met Lys Pro Leu Glu Ser Leu  
355 360 365

Ala Leu Glu Glu Ala Ser Gly Pro Val Ser Gln Ser Gln Lys Ser Lys  
370 375 380

Ser Arg Gly Arg Ala Gly Pro Asp Ala Val Thr Leu Gln Ala Val Thr  
385 390 395 400

His Asp Asn Glu Trp Glu Met Leu Ser Pro Gln Pro Val Gln Lys Asn  
405 410 415

Met Ile Pro Asp Thr Glu Met Glu Glu Glu Thr Glu Phe Leu Glu Leu  
420 425 430

Gly Thr Arg Ile Ser Arg Pro Asn Gly Leu Leu Ser Glu Asp Val Gly  
435 440 445

Met Asp Ile Pro Phe Glu Glu Gly Val Leu Ser Pro Ser Ala Ala Asp  
450 455 460

Met Arg Pro Glu Pro Pro Asn Ser Leu Asp Leu Asn Asp Thr His Pro  
465 470 475 480

Arg Arg Ile Lys Leu Thr Ala Pro Asn Ile Asn Leu Ser Leu Asp Gln  
485 490 495

Ser Glu Gly Ser Ile Leu Ser Asp Asp Asn Leu Asp Ser Pro Asp Glu  
500 505 510

Ile Asp Ile Asn Val Asp Glu Leu Asp Thr Pro Asp Glu Ala Asp Ser  
515 520 525

Phe Glu Tyr Thr Gly His Asp Pro Thr Ala Asn Lys Asp Ser Gly Gln  
530 535 540

Glu Ser Glu Ser Ile Pro Glu Tyr Thr Ala Glu Glu Glu Arg Glu Asp  
545 550 555 560

Asn Arg Leu Trp Arg Thr Val Val Ile Gly Glu Gln Glu Gln Arg Ile  
565 570 575

Asp Met Lys Val Ile Glu Pro Tyr Arg Arg Val Ile Ser His Gly Gly

49321-142 SEQ LIST.txt  
580            585            590

Tyr Tyr Gly Asp Gly Leu Asn Ala Ile Ile Val Phe Ala Ala Cys Phe  
595            600            605

Leu Pro Asp Ser Ser Arg Ala Asp Tyr His Tyr Val Met Glu Asn Leu  
610            615            620

Phe Leu Tyr Val Ile Ser Thr Leu Glu Leu Met Val Ala Glu Asp Tyr  
625            630            635            640

Met Ile Val Tyr Leu Asn Gly Ala Thr Pro Arg Arg Arg Met Pro Gly  
645            650            655

Leu Gly Trp Met Lys Lys Cys Tyr Gln Met Ile Asp Arg Arg Leu Arg  
660            665            670

Lys Asn Leu Lys Ser Phe Ile Ile Val His Pro Ser Trp Phe Ile Arg  
675            680            685

Thr Ile Leu Ala Val Thr Arg Pro Phe Ile Ser Ser Lys Phe Ser Ser  
690            695            700

Lys Ile Lys Tyr Val Asn Ser Leu Ser Glu Leu Ser Gly Leu Ile Pro  
705            710            715            720

Met Asp Cys Ile His Ile Pro Glu Ser Ile Ile Lys Leu Asp Glu Glu  
725            730            735

Leu Arg Glu Ala Ser Glu Ala Ala Lys Thr Ser Cys Leu Tyr Asn Asp  
740            745            750

Pro Glu Met Ser Ser Met Glu Lys Asp Ile Asp Leu Lys Leu Lys Glu  
755            760            765

Lys Pro  
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<212> DNA  
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<220>  
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49321-142 SEQ LIST.txt

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 ctaactattt aaaggctcgc ggtcgcaaata gtttgacta aacgtagg atg gga ctt 177  
 Met Gly Leu  
 1  
  
 aag ttg aac ggc aga tat att tca ctg atc ctc gcg gtg caa ata gcg 225  
 Lys Leu Asn Gly Arg Tyr Ile Ser Leu Ile Leu Ala Val Gln Ile Ala  
 5 10 15  
  
 tat ctg gtg cag gcc gtg aga gca gcg ggc aag tgc gat gcg gtc ttc 273  
 Tyr Leu Val Gln Ala Val Arg Ala Ala Gly Lys Cys Asp Ala Val Phe  
 20 25 30 35  
  
 aag ggc ttt tcg gac tgt ttg ctc aag ctg ggc gac agc atg gcc aac 321  
 Lys Gly Phe Ser Asp Cys Leu Leu Lys Leu Gly Asp Ser Met Ala Asn  
 40 45 50  
  
 tac ccg cag ggc ctg gac gac aag acg aac atc aag acc gtg tgc aca 369  
 Tyr Pro Gln Gly Leu Asp Asp Lys Thr Asn Ile Lys Thr Val Cys Thr  
 55 60 65  
  
 tac tgg gag gat ttc cac agc tgc acg gtc aca gcc ctt acg gat tgc 417  
 Tyr Trp Glu Asp Phe His Ser Cys Thr Val Thr Ala Leu Thr Asp Cys  
 70 75 80  
  
 cag gaa ggg gcg aaa gat atg tgg gat aaa ctg aga aaa gaa tcc aaa 465  
 Gln Glu Gly Ala Lys Asp Met Trp Asp Lys Leu Arg Lys Glu Ser Lys  
 85 90 95  
  
 aac ctc aac atc caa ggc agc tta ttc gaa ctc tgc ggc agc ggc aac 513  
 Asn Leu Asn Ile Gln Gly Ser Leu Phe Glu Leu Cys Gly Ser Gly Asn  
 100 105 110 115  
  
 ggg gcg gcg ggg tcc ctg ctc ccg gcg ttc ccg gtg ctc ctg gtg tct 561  
 Gly Ala Ala Gly Ser Leu Leu Pro Ala Phe Pro Val Leu Leu Val Ser  
 120 125 130  
  
 ctc tcg gca gct tta gcg acc tgg ctt tcc ttc tga gcgtggggcc 607  
 Leu Ser Ala Ala Leu Ala Thr Trp Leu Ser Phe  
 135 140  
  
 agctcccccc ggcgcggcac ccacactcac tccatgctcc cggaaatcga gaggaagatc 667  
 cattagttct ttggggacgt tgtgattctc tgtgatgctg aaaacactca tataggattg 727  
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 acacacaaat aagaaaaacgg caaacccacc ccattttta attttattat tattaatttt 907  
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49321-142 SEQ LIST.txt

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<400> 10

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Gln Ile Ala Tyr Leu Val Gln Ala Val Arg Ala Ala Gly Lys Cys Asp  
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Ala Val Phe Lys Gly Phe Ser Asp Cys Leu Leu Lys Leu Gly Asp Ser  
35                   40    45

Met Ala Asn Tyr Pro Gln Gly Leu Asp Asp Lys Thr Asn Ile Lys Thr  
50                   55   60

Val Cys Thr Tyr Trp Glu Asp Phe His Ser Cys Thr Val Thr Ala Leu  
65                   70   80

Thr Asp Cys Gln Glu Gly Ala Lys Asp Met Trp Asp Lys Leu Arg Lys  
85                   90   95

Glu Ser Lys Asn Leu Asn Ile Gln Gly Ser Leu Phe Glu Leu Cys Gly  
100               105   110

Ser Gly Asn Gly Ala Ala Gly Ser Leu Leu Pro Ala Phe Pro Val Leu

49321-142 SEQ LIST.txt

115                    120                    125

Leu	Val	Ser	Leu	Ser	Ala	Ala	Leu	Ala	Thr	Trp	Leu	Ser	Phe
130					135						140		

<210> 11  
<211> 5180  
<212> DNA  
<213> *Homo sapiens*

## 49321-142 SEQ LIST.txt

Lys Asn Asn Glu Leu Cys Tyr Leu Ala Thr Ile Asp Trp Ser Arg Ile		
150	155	160
ctg gat tcc gtg gag gat aat tac atc gtg ttg aac aaa gat gac aac		585
Leu Asp Ser Val Glu Asp Asn Tyr Ile Val Leu Asn Lys Asp Asp Asn		
165	170	175
gag gag tgt gga gac atc tgt ccg ggt acc gcg aag ggc aag acc aac		633
Glu Glu Cys Gly Asp Ile Cys Pro Gly Thr Ala Lys Gly Lys Thr Asn		
180	185	190
tgc ccc gcc acc gtc atc aac ggg cag ttt gtc gaa cga tgt tgg act		681
Cys Pro Ala Thr Val Ile Asn Gly Gln Phe Val Glu Arg Cys Trp Thr		
200	205	210
cat agt cac tgc cag aaa gtt tgc ccg acc atc tgt aag tca cac ggc		729
His Ser His Cys Gln Lys Val Cys Pro Thr Ile Cys Lys Ser His Gly		
215	220	225
tgc acc gcc qaa ggc ctc tgt tgc cac agc gag tgc ctg ggc aac tgt		777
Cys Thr Ala Glu Gly Leu Cys Cys His Ser Glu Cys Leu Gly Asn Cys		
230	235	240
tct cag ccc gac gac ccc acc aag tgc gtg gcc tgc cgc aac ttc tac		825
Ser Gln Pro Asp Asp Pro Thr Lys Cys Val Ala Cys Arg Asn Phe Tyr		
245	250	255
ctg gac ggc agg tgt gtg gag acc tgc ccg ccc ccg tac tac cac ttc		873
Leu Asp Gly Arg Cys Val Glu Thr Cys Pro Pro Tyr Tyr His Phe		
260	265	270
cag gac tgg cgc tgt gtg aac ttc agc ttc tgc cag gac ctg cac cac		921
Gln Asp Trp Arg Cys Val Asn Phe Ser Phe Cys Gln Asp Leu His His		
280	285	290
aaa tgc aag aac tcg cgg agg cag ggc tgc cac cag tac gtc att cac		969
Lys Cys Lys Asn Ser Arg Arg Gln Gly Cys His Gln Tyr Val Ile His		
295	300	305
aac aac aag tgc atc cct gag tgt ccc tcc ggg tac acg atg aat tcc		1017
Asn Asn Lys Cys Ile Pro Glu Cys Pro Ser Gly Tyr Thr Met Asn Ser		
310	315	320
agc aac ttg ctg tgc acc cca tgc ctg ggt ccc tgt ccc aag gtg tgc		1065
Ser Asn Leu Leu Cys Thr Pro Cys Leu Gly Pro Cys Pro Lys Val Cys		
325	330	335
cac ctc cta gaa ggc gag aag acc atc gac tcg gtg acg tct gcc cag		1113
His Leu Leu Glu Gly Glu Lys Thr Ile Asp Ser Val Thr Ser Ala Gln		
340	345	350
gag ctc cga gga tgc acc gtc atc aac ggg agt ctg atc atc aac att		1161
Glu Leu Arg Gly Cys Thr Val Ile Asn Gly Ser Leu Ile Ile Asn Ile		
360	365	370
cga gga ggc aac aat ctg gca gct gag cta gaa gcc aac ctc ggc ctc		1209
Arg Gly Gly Asn Asn Leu Ala Ala Glu Leu Glu Ala Asn Leu Gly Leu		
375	380	385

## 49321-142 SEQ LIST.txt

att gaa gaa att tca ggg tat cta aaa atc cgc cga tcc tac gct ctg Ile Glu Glu Ile Ser Gly Tyr Leu Lys Ile Arg Arg Ser Tyr Ala Leu 390 395 400	1257
gtg tca ctt tcc ttc ttc cg <sup>g</sup> aag tta cgt ctg att cga gga gag acc Val Ser Leu Ser Phe Phe Arg Lys Leu Arg Leu Ile Arg Gly Glu Thr 405 410 415	1305
ttg gaa att ggg aac tac tcc ttc tat gcc ttg gac aac cag aac cta Leu Glu Ile Gly Asn Tyr Ser Phe Tyr Ala Leu Asp Asn Gln Asn Leu 420 425 430 435	1353
agg cag ctc tgg gac tgg agc aaa cac aac ctc acc atc act cag ggg Arg Gln Leu Trp Asp Trp Ser Lys His Asn Leu Thr Ile Thr Gln Gly 440 445 450	1401
aaa ctc ttc cac tat aac ccc aaa ctc tgc ttg tca gaa atc cac Lys Leu Phe His Tyr Asn Pro Lys Leu Cys Leu Ser Glu Ile His 455 460 465	1449
aag atg gaa gaa gtt tca gga acc aag ggg cgc cag gag aga aac gac Lys Met Glu Glu Val Ser Gly Thr Lys Gly Arg Gln Glu Arg Asn Asp 470 475 480	1497
att gcc ctg aag acc aat ggg gac cag gca tcc tgt gaa aat gag tta Ile Ala Leu Lys Thr Asn Gly Asp Gln Ala Ser Cys Glu Asn Glu Leu 485 490 495	1545
ctt aaa ttt tct tac att cgg aca tct ttt gac aag atc ttg ctg aga Leu Lys Phe Ser Tyr Ile Arg Thr Ser Phe Asp Lys Ile Leu Leu Arg 500 505 510 515	1593
tgg gag ccg tac tgg ccc ccc gac ttc cga gac ctc ttg ggg ttc atg Trp Glu Pro Tyr Trp Pro Pro Asp Phe Arg Asp Leu Leu Gly Phe Met 520 525 530	1641
ctg ttc tac aaa gag gcc cct tat cag aat gtg acg gag ttc gac ggg Leu Phe Tyr Lys Glu Ala Pro Tyr Gln Asn Val Thr Glu Phe Asp Gly 535 540 545	1689
cag gat gca tgt ggt tcc aac agt tgg acg gtg gta gac att gac cca Gln Asp Ala Cys Gly Ser Asn Ser Trp Thr Val Val Asp Ile Asp Pro 550 555 560	1737
ccc ctg agg tcc aac gac ccc aaa tca cag aac cac cca ggg tgg ctg Pro Leu Arg Ser Asn Asp Pro Lys Ser Gln Asn His Pro Gly Trp Leu 565 570 575	1785
atg cgg ggt ctc aag ccc tgg acc cag tat gcc atc ttt gtg aag acc Met Arg Gly Leu Lys Pro Trp Thr Gln Tyr Ala Ile Phe Val Lys Thr 580 585 590 595	1833
ctg gtc acc ttt tcg gat gaa cgc cgg acc tat ggg gcc aag agt gac Leu Val Thr Phe Ser Asp Glu Arg Arg Thr Tyr Gly Ala Lys Ser Asp 600 605 610	1881
atc att tat gtc cag aca gat gcc acc aac ccc tct gtg ccc ctg gat Ile Ile Tyr Val Gln Thr Asp Ala Thr Asn Pro Ser Val Pro Leu Asp 615 620 625	1929

49321-142 SEQ LIST.txt

cca atc tca gtg tct aac tca tca tcc cag att att ctg aag tgg aaa Pro Ile Ser Val Ser Asn Ser Ser Gln Ile Ile Leu Lys Trp Lys 630 635 640	1977
cca ccc tcc gac ccc aat ggc aac atc acc cac tac ctg gtt ttc tgg Pro Pro Ser Asp Pro Asn Gly Asn Ile Thr His Tyr Leu Val Phe Trp 645 650 655	2025
gag agg cag gcg gaa gac agt gag ctg ttc gag ctg gat tat tgc ctc Glu Arg Gln Ala Glu Asp Ser Glu Leu Phe Glu Leu Asp Tyr Cys Leu 660 665 670 675	2073
aaa ggg ctg aag ctg ccc tcg agg acc tgg tct cca cca ttc gag tct Lys Gly Leu Lys Leu Pro Ser Arg Thr Trp Ser Pro Pro Phe Glu Ser 680 685 690	2121
gaa gat tct cag aag cac aac cag agt gag tat gag gat tcg gcc ggc Glu Asp Ser Gln Lys His Asn Gln Ser Glu Tyr Glu Asp Ser Ala Gly 695 700 705	2169
gaa tgc tgc tcc tgt cca aag aca gac tct cag atc ctg aag gag ctg Glu Cys Cys Ser Cys Pro Lys Thr Asp Ser Gln Ile Leu Lys Glu Leu 710 715 720	2217
gag gag tcc tcg ttt agg aag acg ttt gag gat tac ctg cac aac gtg Glu Glu Ser Ser Phe Arg Lys Thr Phe Glu Asp Tyr Leu His Asn Val 725 730 735	2265
gtt ttc gtc ccc agg cca tct cg <sup>g</sup> aaa cgc agg tcc ctt ggc gat gtt Val Phe Val Pro Arg Pro Ser Arg Lys Arg Arg Ser Leu Gly Asp Val 740 745 750 755	2313
ggg aat gtg acg gtg gcc gtg ccc acg gtg gca gct ttc ccc aac act Gly Asn Val Thr Val Ala Val Pro Thr Val Ala Ala Phe Pro Asn Thr 760 765 770	2361
tcc tcg acc agc gtg ccc acg agt ccg gag gag cac agg cct ttt gag Ser Ser Thr Ser Val Pro Thr Ser Pro Glu Glu His Arg Pro Phe Glu 775 780 785	2409
aag gtg gtg aac aag gag tcg ctg gtc atc tcc ggc ttg cga cac ttc Lys Val Val Asn Lys Glu Ser Leu Val Ile Ser Gly Leu Arg His Phe 790 795 800	2457
acg ggc tat cgc atc gag ctg cag gct tgc aac cag gac acc cct gag Thr Gly Tyr Arg Ile Glu Leu Gln Ala Cys Asn Gln Asp Thr Pro Glu 805 810 815	2505
gaa cgg tgc agt gtg gca gcc tac gtc agt gcg agg acc atg cct gaa Glu Arg Cys Ser Val Ala Ala Tyr Val Ser Ala Arg Thr Met Pro Glu 820 825 830 835	2553
gcc aag gct gat gac att gtt ggc cct gtg acg cat gaa atc ttt gag Ala Lys Ala Asp Asp Ile Val Gly Pro Val Thr His Glu Ile Phe Glu 840 845 850	2601
aac aac gtc gtc cac ttg atg tgg cag gag ccg aag gag ccc aat ggt Asn Asn Val Val His Leu Met Trp Gln Glu Pro Lys Glu Pro Asn Gly	2649

49321-142 SEQ LIST.txt

855	860	865	
ctg atc gtg ctg tat gaa gtg agt tat cgg cga tat ggt gat gag gag Leu Ile Val Leu Tyr Glu Val Ser Tyr Arg Arg Tyr Gly Asp Glu Glu 870 875 880			2697
ctg cat ctc tgc gtc tcc cgc aag cac ttc gct ctg gaa cgg ggc tgc Leu His Leu Cys Val Ser Arg Lys His Phe Ala Leu Glu Arg Gly Cys 885 890 895			2745
agg ctg cgt ggg ctg tca ccg ggg aac tac agc gtg cga atc cgg gcc Arg Leu Arg Gly Leu Ser Pro Gly Asn Tyr Ser Val Arg Ile Arg Ala 900 905 910 915			2793
acc tcc ctt gcg ggc aac ggc tct tgg acg gaa ccc acc tat ttc tac Thr Ser Leu Ala Gly Asn Gly Ser Trp Thr Glu Pro Thr Tyr Phe Tyr 920 925 930			2841
gtg aca gac tat tta gac gtc ccg tca aat att gca aaa att atc atc Val Thr Asp Tyr Leu Asp Val Pro Ser Asn Ile Ala Lys Ile Ile Ile 935 940 945			2889
ggc ccc ctc atc ttt gtc ttt ctc ttc agt gtt gtg att gga agt att Gly Pro Leu Ile Phe Val Phe Leu Phe Ser Val Val Ile Gly Ser Ile 950 955 960			2937
tat cta ttc ctg aga aag agg cag cca gat ggg ccg ctg gga ccg ctt Tyr Leu Phe Leu Arg Lys Arg Gln Pro Asp Gly Pro Leu Gly Pro Leu 965 970 975			2985
tac gct tct tca aac cct gag tat ctc agt gcc agt gat gtg ttt cca Tyr Ala Ser Ser Asn Pro Glu Tyr Leu Ser Ala Ser Asp Val Phe Pro 980 985 990 995			3033
tgc tct gtg tac gtg ccg gac gag tgg gag gtg tct cga gag aag Cys Ser Val Tyr Val Pro Asp Glu Trp Glu Val Ser Arg Glu Lys 1000 1005 1010			3078
atc acc ctc ctt cga gag ctg ggg cag ggc tcc ttc ggc atg gtg Ile Thr Leu Leu Arg Glu Leu Gly Gln Gly Ser Phe Gly Met Val 1015 1020 1025			3123
tat gag ggc aat gcc agg gac atc atc aag ggt gag gca gag acc Tyr Glu Gly Asn Ala Arg Asp Ile Ile Lys Gly Glu Ala Glu Thr 1030 1035 1040			3168
cgc gtg gcg gtg aag acg gtc aac gag tca gcc agt ctc cga gag Arg Val Ala Val Lys Thr Val Asn Glu Ser Ala Ser Leu Arg Glu 1045 1050 1055			3213
cgg att gag ttc ctc aat gag gcc tcg gtc atg aag ggc ttc acc Arg Ile Glu Phe Leu Asn Glu Ala Ser Val Met Lys Gly Phe Thr 1060 1065 1070			3258
tgc cat cac gtg gtg cgc ctc ctg gga gtg gtg tcc aag ggc cag Cys His His Val Val Arg Leu Leu Gly Val Val Ser Lys Gly Gln 1075 1080 1085			3303
ccc acg ctg gtg gtg atg gag ctg atg gct cac gga gac ctg aag			3348

## 49321-142 SEQ LIST.txt

Pro	Thr	Leu	Val	Val	Met	Glu	Leu	Met	Ala	His	Gly	Asp	Leu	Lys	
					1090				1095					1100	
agc	tac	ctc	cgt	tct	ctg	cg	cca	gag	gct	gag	aat	aat	cct	ggc	3393
Ser	Tyr	Leu	Arg	Ser	Leu	Arg	Pro	Glu	Ala	Glu	Asn	Asn	Pro	Gly	
					1105				1110					1115	
cgc	cct	ccc	cct	acc	ctt	caa	gag	atg	att	cag	atg	g	ca	gag	3438
Arg	Pro	Pro	Pro	Thr	Leu	Gln	Glu	Met	Ile	Gln	Met	Ala	Ala	Glu	
					1120				1125					1130	
att	gct	gac	ggg	atg	gcc	tac	ctg	aac	gcc	aag	aag	ttt	gtg	cat	3483
Ile	Ala	Asp	Gly	Met	Ala	Tyr	Leu	Asn	Ala	Lys	Lys	Phe	Val	His	
					1135				1140					1145	
cg	gac	ctg	gca	g	aga	aac	tgc	atg	gtc	gcc	cat	gat	ttt	act	3528
Arg	Asp	Leu	Ala	Ala	Arg	Asn	Cys	Met	Val	Ala	His	Asp	Phe	Thr	
					1150				1155					1160	
gtc	aaa	att	gga	gac	ttt	gga	atg	acc	aga	gac	atc	tat	gaa	acg	3573
Val	Lys	Ile	Gly	Asp	Phe	Gly	Met	Thr	Arg	Asp	Ile	Tyr	Glu	Thr	
					1165				1170					1175	
gat	tac	tac	cg	aaa	ggg	ggc	aag	ggt	ctg	ctc	cct	gta	cg	tgg	3618
Asp	Tyr	Tyr	Arg	Lys	Gly	Gly	Lys	Gly	Leu	Leu	Pro	Val	Arg	Trp	
					1180				1185					1190	
atg	gca	ccg	gag	tcc	ctg	aag	gat	ggg	gtc	t	tc	acc	act	tct	3663
Met	Ala	Pro	Glu	Ser	Leu	Lys	Asp	Gly	Val	Phe	Thr	Thr	Ser	Ser	
					1195				1200					1205	
gac	atg	tgg	tcc	ttt	ggc	gt	gt	gtc	ctt	tgg	gaa	atc	acc	acg	3708
Asp	Met	Trp	Ser	Phe	Gly	Val	Val	Leu	Trp	Glu	Ile	Thr	Ser	Leu	
					1210				1215					1220	
gca	gaa	cag	cct	ta	caa	ggc	ctg	tct	aat	gaa	cag	gt	ttg	aaa	3753
Ala	Glu	Gln	Pro	Tyr	Gln	Gly	Leu	Ser	Asn	Glu	Gln	Val	Leu	Lys	
					1225				1230					1235	
ttt	gtc	atg	gat	gga	ggg	tat	ctg	gat	caa	ccc	gac	aac	tgt	cca	3798
Phe	Val	Met	Asp	Gly	Gly	Tyr	Leu	Asp	Gln	Pro	Asp	Asn	Cys	Pro	
					1240				1245					1250	
gag	aga	gtc	act	gac	ctc	atg	cg	atg	tgc	tgg	caa	ttc	aac	ccc	3843
Glu	Arg	Val	Thr	Asp	Leu	Met	Arg	Met	Cys	Trp	Gln	Phe	Asn	Pro	
					1255				1260					1265	
aac	atg	agg	cca	acc	ttc	ctg	qag	att	gtc	aa	ctg	ctc	aag	gac	3888
Asn	Met	Arg	Pro	Thr	Phe	Leu	Glu	Ile	Val	Asn	Leu	Leu	Lys	Asp	
					1270				1275					1280	
gac	ctg	cac	ccc	agc	ttt	cca	gag	gt	tgc	ttc	ttc	cac	agc	gag	3933
Asp	Leu	His	Pro	Ser	Phe	Pro	Glu	Val	Ser	Phe	Phe	His	Ser	Glu	
					1285				1290					1295	
gag	aac	aag	gct	ccc	gag	agt	gag	gag	ctg	gag	atg	gag	ttt	gag	3978
Glu	Asn	Lys	Ala	Pro	Glu	Ser	Glu	Glu	Leu	Glu	Met	Glu	Phe	Glu	
					1300				1305					1310	

49321-142 SEQ LIST.txt

gac atg gag aat gtg ccc ctg gac cgt tcc tcg cac tgt cag agg	4023
Asp Met Glu Asn Val Pro Leu Asp Arg Ser Ser His Cys Gln Arg	
1315 1320 1325	
gag gag gcg ggg ggc cg <sup>g</sup> gat gga ggg tcc tcg ctg ggt ttc aag	4068
Glu Glu Ala Gly Gly Arg Asp Gly Gly Ser Ser Leu Gly Phe Lys	
1330 1335 1340	
cg <sup>g</sup> agc tac gag gaa cac atc cct tac aca cac atg aac gga ggc	4113
Arg Ser Tyr Glu Glu His Ile Pro Tyr Thr His Met Asn Gly Gly	
1345 1350 1355	
aag aaa aac ggg cg <sup>g</sup> att ctg acc ttg cct cg <sup>g</sup> tcc aat cct tcc	4158
Lys Lys Asn Gly Arg Ile Leu Thr Leu Pro Arg Ser Asn Pro Ser	
1360 1365 1370	
taa cagtgcctac cgtggcg <sup>gggg</sup> gcgggcagg <sup>gg</sup> gttcccattt tcgcttcct	4211
ctggtttgaa agcctctgga aaactcagga ttctcacgac tctaccatgt ccaatggagt	4271
tcagagatcg ttccatataca tttctgttca tcttaagg <sup>tg</sup> gactcg <sup>ttt</sup> gttaccaatt	4331
taactagtcc tgcagaggat ttaactgtga acctggaggg caaggggtt ccacagttgc	4391
tgctcctt <sup>tg</sup> gggcaacgac gg <sup>ttt</sup> caaac caggattt <sup>tg</sup> tg <sup>ttttt</sup> cg ttccccccac	4451
ccgccccccag cagatggaaa gaaagcacct gttttacaa attctttttt tttttttttt	4511
ttttgctgg tgtctgagct tcagtataaa agacaaaact tcctgtt <sup>tg</sup> ggaacaaaag	4571
ttcgaaaagaa aaaacaaaac aaaaacacccc agccctgttc caggagaatt tcaagttta	4631
caggttgagc ttcaagatgg ttttttgg <sup>t</sup> tttttttttt tctctcatcc aggctgaagg	4691
atttttttt tcttacaaa atgagttcct caaattgacc aatagctgct gcttcatat	4751
tttggataag ggtctgtgg cccggcgtgt gctcacgtgt gtatgcacgt gtgtgtgtcc	4811
attagacacg gctgacgtgt gtgcaaagta tccatgc <sup>gg</sup> gttgatgctt tggaaattgg	4871
ctcatgaagg ttcttctcaa ggg <sup>t</sup> cgagc tc <sup>at</sup> ccccct ctctc <sup>tt</sup> cc ttcttattga	4931
ctgggagact gtgctctcg <sup>a</sup> cagattcttc ttgtgtcaga agtctagcct caggtttcta	4991
ccctcccttc acattgg <sup>t</sup> gg ccaagggagg agcatttcat ttggagt <sup>gt</sup> at tatgaatctt	5051
ttcaagacca aaccaagcta ggacattaaa aaaaaaaaaa agaaaaagaa agaaaaaaaca	5111
aatggaaaa aggaaaaaaaaaaa aaaagaactg agatgacaga gttttgagaa tatattt <sup>gt</sup> a	5171
ccatattta	5180

<210> 12  
<211> 1370  
<212> PRT  
<213> Homo sapiens

<400> 12

49321-142 SEQ LIST.txt

Met Gly Thr Gly Gly Arg Arg Gly Ala Ala Ala Ala Pro Leu Leu Val  
1 5 10 15

Ala Val Ala Ala Leu Leu Leu Gly Ala Ala Gly His Leu Tyr Pro Gly  
20 25 30

Glu Val Cys Pro Gly Met Asp Ile Arg Asn Asn Leu Thr Arg Leu His  
35 40 45

Glu Leu Glu Asn Cys Ser Val Ile Glu Gly His Leu Gln Ile Leu Leu  
50 55 60

Met Phe Lys Thr Arg Pro Glu Asp Phe Arg Asp Leu Ser Phe Pro Lys  
65 70 75 80

Leu Ile Met Ile Thr Asp Tyr Leu Leu Leu Phe Arg Val Tyr Gly Leu  
85 90 95

Glu Ser Leu Lys Asp Leu Phe Pro Asn Leu Thr Val Ile Arg Gly Ser  
100 105 110

Arg Leu Phe Phe Asn Tyr Ala Leu Val Ile Phe Glu Met Val His Leu  
115 120 125

Lys Glu Leu Gly Leu Tyr Asn Leu Met Asn Ile Thr Arg Gly Ser Val  
130 135 140

Arg Ile Glu Lys Asn Asn Glu Leu Cys Tyr Leu Ala Thr Ile Asp Trp  
145 150 155 160

Ser Arg Ile Leu Asp Ser Val Glu Asp Asn Tyr Ile Val Leu Asn Lys  
165 170 175

Asp Asp Asn Glu Glu Cys Gly Asp Ile Cys Pro Gly Thr Ala Lys Gly  
180 185 190

Lys Thr Asn Cys Pro Ala Thr Val Ile Asn Gly Gln Phe Val Glu Arg  
195 200 205

Cys Trp Thr His Ser His Cys Gln Lys Val Cys Pro Thr Ile Cys Lys  
210 215 220

Ser His Gly Cys Thr Ala Glu Gly Leu Cys Cys His Ser Glu Cys Leu  
225 230 235 240

49321-142 SEQ LIST.txt

Gly Asn Cys Ser Gln Pro Asp Asp Pro Thr Lys Cys Val Ala Cys Arg  
245 250 255

Asn Phe Tyr Leu Asp Gly Arg Cys Val Glu Thr Cys Pro Pro Pro Tyr  
260 265 270

Tyr His Phe Gln Asp Trp Arg Cys Val Asn Phe Ser Phe Cys Gln Asp  
275 280 285

Leu His His Lys Cys Lys Asn Ser Arg Arg Gln Gly Cys His Gln Tyr  
290 295 300

Val Ile His Asn Asn Lys Cys Ile Pro Glu Cys Pro Ser Gly Tyr Thr  
305 310 315 320

Met Asn Ser Ser Asn Leu Leu Cys Thr Pro Cys Leu Gly Pro Cys Pro  
325 330 335

Lys Val Cys His Leu Leu Glu Gly Glu Lys Thr Ile Asp Ser Val Thr  
340 345 350

Ser Ala Gln Glu Leu Arg Gly Cys Thr Val Ile Asn Gly Ser Leu Ile  
355 360 365

Ile Asn Ile Arg Gly Gly Asn Asn Leu Ala Ala Glu Leu Glu Ala Asn  
370 375 380

Leu Gly Leu Ile Glu Glu Ile Ser Gly Tyr Leu Lys Ile Arg Arg Ser  
385 390 395 400

Tyr Ala Leu Val Ser Leu Ser Phe Phe Arg Lys Leu Arg Leu Ile Arg  
405 410 415

Gly Glu Thr Leu Glu Ile Gly Asn Tyr Ser Phe Tyr Ala Leu Asp Asn  
420 425 430

Gln Asn Leu Arg Gln Leu Trp Asp Trp Ser Lys His Asn Leu Thr Ile  
435 440 445

Thr Gln Gly Lys Leu Phe Phe His Tyr Asn Pro Lys Leu Cys Leu Ser  
450 455 460

Glu Ile His Lys Met Glu Glu Val Ser Gly Thr Lys Gly Arg Gln Glu

49321-142 SEQ LIST.txt

465	470	475	480
Arg Asn Asp Ile Ala Leu Lys Thr Asn Gly Asp Gln Ala Ser Cys Glu			
485	490	495	
Asn Glu Leu Leu Lys Phe Ser Tyr Ile Arg Thr Ser Phe Asp Lys Ile			
500	505	510	
Leu Leu Arg Trp Glu Pro Tyr Trp Pro Pro Asp Phe Arg Asp Leu Leu			
515	520	525	
Gly Phe Met Leu Phe Tyr Lys Glu Ala Pro Tyr Gln Asn Val Thr Glu			
530	535	540	
Phe Asp Gly Gln Asp Ala Cys Gly Ser Asn Ser Trp Thr Val Val Asp			
545	550	555	560
Ile Asp Pro Pro Leu Arg Ser Asn Asp Pro Lys Ser Gln Asn His Pro			
565	570	575	
Gly Trp Leu Met Arg Gly Leu Lys Pro Trp Thr Gln Tyr Ala Ile Phe			
580	585	590	
Val Lys Thr Leu Val Thr Phe Ser Asp Glu Arg Arg Thr Tyr Gly Ala			
595	600	605	
Lys Ser Asp Ile Ile Tyr Val Gln Thr Asp Ala Thr Asn Pro Ser Val			
610	615	620	
Pro Leu Asp Pro Ile Ser Val Ser Asn Ser Ser Ser Gln Ile Ile Leu			
625	630	635	640
Lys Trp Lys Pro Pro Ser Asp Pro Asn Gly Asn Ile Thr His Tyr Leu			
645	650	655	
Val Phe Trp Glu Arg Gln Ala Glu Asp Ser Glu Leu Phe Glu Leu Asp			
660	665	670	
Tyr Cys Leu Lys Gly Leu Lys Leu Pro Ser Arg Thr Trp Ser Pro Pro			
675	680	685	
Phe Glu Ser Glu Asp Ser Gln Lys His Asn Gln Ser Glu Tyr Glu Asp			
690	695	700	

49321-142 SEQ LIST.txt

Ser Ala Gly Glu Cys Cys Ser Cys Pro Lys Thr Asp Ser Gln Ile Leu  
705 710 715 720

Lys Glu Leu Glu Glu Ser Ser Phe Arg Lys Thr Phe Glu Asp Tyr Leu  
725 730 735

His Asn Val Val Phe Val Pro Arg Pro Ser Arg Lys Arg Arg Ser Leu  
740 745 750

Gly Asp Val Gly Asn Val Thr Val Ala Val Pro Thr Val Ala Ala Phe  
755 760 765

Pro Asn Thr Ser Ser Thr Ser Val Pro Thr Ser Pro Glu Glu His Arg  
770 775 780

Pro Phe Glu Lys Val Val Asn Lys Glu Ser Leu Val Ile Ser Gly Leu  
785 790 795 800

Arg His Phe Thr Gly Tyr Arg Ile Glu Leu Gln Ala Cys Asn Gln Asp  
805 810 815

Thr Pro Glu Glu Arg Cys Ser Val Ala Ala Tyr Val Ser Ala Arg Thr  
820 825 830

Met Pro Glu Ala Lys Ala Asp Asp Ile Val Gly Pro Val Thr His Glu  
835 840 845

Ile Phe Glu Asn Asn Val Val His Leu Met Trp Gln Glu Pro Lys Glu  
850 855 860

Pro Asn Gly Leu Ile Val Leu Tyr Glu Val Ser Tyr Arg Arg Tyr Gly  
865 870 875 880

Asp Glu Glu Leu His Leu Cys Val Ser Arg Lys His Phe Ala Leu Glu  
885 890 895

Arg Gly Cys Arg Leu Arg Gly Leu Ser Pro Gly Asn Tyr Ser Val Arg  
900 905 910

Ile Arg Ala Thr Ser Leu Ala Gly Asn Gly Ser Trp Thr Glu Pro Thr  
915 920 925

Tyr Phe Tyr Val Thr Asp Tyr Leu Asp Val Pro Ser Asn Ile Ala Lys  
930 935 940

49321-142 SEQ LIST.txt

Ile Ile Ile Gly Pro Leu Ile Phe Val Phe Leu Phe Ser Val Val Ile  
945 950 955 960

Gly Ser Ile Tyr Leu Phe Leu Arg Lys Arg Gln Pro Asp Gly Pro Leu  
965 970 975

Gly Pro Leu Tyr Ala Ser Ser Asn Pro Glu Tyr Leu Ser Ala Ser Asp  
980 985 990

Val Phe Pro Cys Ser Val Tyr Val Pro Asp Glu Trp Glu Val Ser Arg  
995 1000 1005

Glu Lys Ile Thr Leu Leu Arg Glu Leu Gly Gln Gly Ser Phe Gly  
1010 1015 1020

Met Val Tyr Glu Gly Asn Ala Arg Asp Ile Ile Lys Gly Glu Ala  
1025 1030 1035

Glu Thr Arg Val Ala Val Lys Thr Val Asn Glu Ser Ala Ser Leu  
1040 1045 1050

Arg Glu Arg Ile Glu Phe Leu Asn Glu Ala Ser Val Met Lys Gly  
1055 1060 1065

Phe Thr Cys His His Val Val Arg Leu Leu Gly Val Val Ser Lys  
1070 1075 1080

Gly Gln Pro Thr Leu Val Val Met Glu Leu Met Ala His Gly Asp  
1085 1090 1095

Leu Lys Ser Tyr Leu Arg Ser Leu Arg Pro Glu Ala Glu Asn Asn  
1100 1105 1110

Pro Gly Arg Pro Pro Pro Thr Leu Gln Glu Met Ile Gln Met Ala  
1115 1120 1125

Ala Glu Ile Ala Asp Gly Met Ala Tyr Leu Asn Ala Lys Lys Phe  
1130 1135 1140

Val His Arg Asp Leu Ala Ala Arg Asn Cys Met Val Ala His Asp  
1145 1150 1155

Phe Thr Val Lys Ile Gly Asp Phe Gly Met Thr Arg Asp Ile Tyr  
1160 1165 1170

49321-142 SEQ LIST.txt

Glu Thr Asp Tyr Tyr Arg Lys Gly Gly Lys Gly Leu Leu Pro Val  
1175 1180 1185

Arg Trp Met Ala Pro Glu Ser Leu Lys Asp Gly Val Phe Thr Thr  
1190 1195 1200

Ser Ser Asp Met Trp Ser Phe Gly Val Val Leu Trp Glu Ile Thr  
1205 1210 1215

Ser Leu Ala Glu Gln Pro Tyr Gln Gly Leu Ser Asn Glu Gln Val  
1220 1225 1230

Leu Lys Phe Val Met Asp Gly Gly Tyr Leu Asp Gln Pro Asp Asn  
1235 1240 1245

Cys Pro Glu Arg Val Thr Asp Leu Met Arg Met Cys Trp Gln Phe  
1250 1255 1260

Asn Pro Asn Met Arg Pro Thr Phe Leu Glu Ile Val Asn Leu Leu  
1265 1270 1275

Lys Asp Asp Leu His Pro Ser Phe Pro Glu Val Ser Phe Phe His  
1280 1285 1290

Ser Glu Glu Asn Lys Ala Pro Glu Ser Glu Glu Leu Glu Met Glu  
1295 1300 1305

Phe Glu Asp Met Glu Asn Val Pro Leu Asp Arg Ser Ser His Cys  
1310 1315 1320

Gln Arg Glu Glu Ala Gly Gly Arg Asp Gly Gly Ser Ser Leu Gly  
1325 1330 1335

Phe Lys Arg Ser Tyr Glu Glu His Ile Pro Tyr Thr His Met Asn  
1340 1345 1350

Gly Gly Lys Lys Asn Gly Arg Ile Leu Thr Leu Pro Arg Ser Asn  
1355 1360 1365

Pro Ser  
1370

49321-142 SEQ LIST.txt

<211> 5084  
<212> DNA  
<213> *Homo sapiens*

<220>  
<221> CDS  
<222> (22) .. (2952)

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<220>
<221> variation
<222> (3101)..(3101)
<223> C and T alleles exist at this position
```

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<220>
<221> variation
<222> (4354)..(4354)
<223> A and G alleles exist at this position
```

```
<220>
<221> variation
<222> (4656)..(4656)
<223> G and T alleles exist at this position
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<400> 13  
gatcccatcg cagctaccgc g atg aga ggc gct cgc ggc gcc tgg gat ttt 51  
Met Arg Gly Ala Arg Gly Ala Trp Asp Phe  
1 5 10

ctc tgc gtt ctg ctc cta ctg ctt cgc gtc cag aca ggc tct tct caa  
 Leu Cys Val Leu Leu Leu Leu Arg Val Gln Thr Gly Ser Ser Gln  
 15 20 25

```

cca tct gtg agt cca ggg gaa ccg tct cca cca tcc atc cat cca gga      147
Pro Ser Val Ser Pro Gly Glu Pro Ser Pro Pro Ser Ile His Pro Gly
          30           35           40

```

aaa tca gac tta ata gtc cgc gtg ggc gac gag att agg ctg tta tgc 195  
Lys Ser Asp Leu Ile Val Arg Val Gly Asp Glu Ile Arg Leu Leu Cys  
45 50 55

act gat ccg ggc ttt gtc aaa tgg act ttt gag atc ctg gat gaa acg  
 Thr Asp Pro Gly Phe Val Lys Trp Thr Phe Glu Ile Leu Asp Glu Thr  
 60 65 70

aat gag aat aag cag aat gaa tgg atc acg gaa aag gca gaa gcc acc 291  
 Asn Glu Asn Lys Gln Asn Glu Trp Ile Thr Glu Lys Ala Glu Ala Thr  
 75 80 85 90

aac acc ggc aaa tac acg tgc acc aac aaa cac ggc tta agc aat tcc 339  
Asn Thr Gly Lys Tyr Thr Cys Thr Asn Lys His Gly Leu Ser Asn Ser  
95 100 105

att tat gtg ttt gtt aga gat cct gcc aag ctt ttc ctt gtt gac cgcc  
Ile Tyr Val Phe Val Arg Asp Pro Ala Lys Leu Phe Leu Val Asp Arg  
110 115 120

tcc ttg tat ggg aaa gaa gac aac gac acg ctg gtc cgc tgt cct ctc 435  
 Ser Leu Tyr Gly Lys Glu Asp Asn Asp Thr Leu Val Arg Cys Pro Leu

## 49321-142 SEQ LIST.txt

125	130	135	
aca gac cca gaa gtg acc aat tat tcc ctc aag ggg tgc cag ggg aag Thr Asp Pro Glu Val Thr Asn Tyr Ser Leu Lys Gly Cys Gln Gly Lys			483
140	145	150	
cct ctt ccc aag gac ttg agg ttt att cct gac ccc aag gcg ggc atc Pro Leu Pro Lys Asp Leu Arg Phe Ile Pro Asp Pro Lys Ala Gly Ile			531
155	160	165	170
atg atc aaa agt gtg aaa cgc gcc tac cat cgg ctc tgt ctg cat tgt Met Ile Lys Ser Val Lys Arg Ala Tyr His Arg Leu Cys Leu His Cys			579
175	180	185	
tct gtg gac cag gag ggc aag tca gtg ctg tcg gaa aaa ttc atc ctg Ser Val Asp Gln Glu Gly Lys Ser Val Leu Ser Glu Lys Phe Ile Leu			627
190	195	200	
aaa gtg agg cca gcc ttc aaa gct gtg cct gtt gtg tct gtg tcc aaa Lys Val Arg Pro Ala Phe Lys Ala Val Pro Val Val Ser Val Ser Lys			675
205	210	215	
gca agc tat ctt ctt agg gaa ggg gaa gaa ttc aca gtg acg tgc aca Ala Ser Tyr Leu Leu Arg Glu Glu Phe Thr Val Thr Cys Thr			723
220	225	230	
ata aaa gat gtg tct agt tct gtg tac tca acg tgg aaa aga gaa aac Ile Lys Asp Val Ser Ser Val Tyr Ser Thr Trp Lys Arg Glu Asn			771
235	240	245	250
agt cag act aaa cta cag gag aaa tat aat agc tgg cat cac ggt gac Ser Gln Thr Lys Leu Gln Glu Lys Tyr Asn Ser Trp His His Gly Asp			819
255	260	265	
ttc aat tat gaa cgt cag gca acg ttg act atc agt tca gcg aga gtt Phe Asn Tyr Glu Arg Gln Ala Thr Leu Thr Ile Ser Ser Ala Arg Val			867
270	275	280	
aat gat tct gga gtg ttc atg tgt tat gcc aat aat act ttt gga tca Asn Asp Ser Gly Val Phe Met Cys Tyr Ala Asn Asn Thr Phe Gly Ser			915
285	290	295	
gca aat gtc aca aca acc ttg gaa gta gta gat aaa gga ttc att aat Ala Asn Val Thr Thr Leu Glu Val Val Asp Lys Gly Phe Ile Asn			963
300	305	310	
atc ttc ccc atg ata aac act 'aca gta ttt gta aac gat gga gaa aat Ile Phe Pro Met Ile Asn Thr Thr Val Phe Val Asn Asp Gly Glu Asn			1011
315	320	325	330
gta gat ttg att gtt gaa tat gaa gca ttc ccc aaa cct gaa cac cag Val Asp Leu Ile Val Glu Tyr Glu Ala Phe Pro Lys Pro Glu His Gln			1059
335	340	345	
cag tgg atc tat atg aac aga acc ttc act gat aaa tgg gaa gat tat Gln Trp Ile Tyr Met Asn Arg Thr Phe Thr Asp Lys Trp Glu Asp Tyr			1107
350	355	360	
ccc aag tct gag aat gaa agt aat atc aga tac gta agt gaa ctt cat			1155

## 49321-142 SEQ LIST.txt

Pro Lys Ser Glu Asn Glu Ser Asn Ile Arg Tyr Val Ser Glu Leu His		
365	370	375
ctc acg aga tta aaa ggc acc gaa gga ggc act tac aca ttc cta gtg		1203
Leu Thr Arg Leu Lys Gly Thr Glu Gly Gly Thr Tyr Thr Phe Leu Val		
380	385	390
tcc aat tct gac gtc aat gct gcc ata gca ttt aat gtt tat gtg aat		1251
Ser Asn Ser Asp Val Asn Ala Ala Ile Ala Phe Asn Val Tyr Val Asn		
395	400	405
aca aaa cca gaa atc ctg act tac gac agg ctc gtg aat ggc atg ctc		1299
Thr Lys Pro Glu Ile Leu Thr Tyr Asp Arg Leu Val Asn Gly Met Leu		
415	420	425
caa tgt gtg gca gca gga ttc cca gag ccc aca ata gat tgg tat ttt		1347
Gln Cys Val Ala Ala Gly Phe Pro Glu Pro Thr Ile Asp Trp Tyr Phe		
430	435	440
tgt cca gga act gag cag aga tgc tct gct tct gta ctg cca gtg gat		1395
Cys Pro Gly Thr Glu Gln Arg Cys Ser Ala Ser Val Leu Pro Val Asp		
445	450	455
gtg cag aca cta aac tca tct ggg cca ccg ttt gga aag cta gtg gtt		1443
Val Gln Thr Leu Asn Ser Ser Gly Pro Pro Phe Gly Lys Leu Val Val		
460	465	470
cag agt tct ata gat tct agt gca ttc aag cac aat ggc acg gtt gaa		1491
Gln Ser Ser Ile Asp Ser Ser Ala Phe Lys His Asn Gly Thr Val Glu		
475	480	485
tgt aag gct tac aac gat gtg ggc aag act tct gcc tat ttt aac ttt		1539
Cys Lys Ala Tyr Asn Asp Val Gly Lys Thr Ser Ala Tyr Phe Asn Phe		
495	500	505
gca ttt aaa ggt aac aac aaa gag caa atc cat ccc cac acc ctg ttc		1587
Ala Phe Lys Gly Asn Asn Lys Glu Gln Ile His Pro His Thr Leu Phe		
510	515	520
act cct ttg ctg att ggt ttc gta atc gta gct ggc atg atg tgc att		1635
Thr Pro Leu Leu Ile Gly Phe Val Ile Val Ala Gly Met Met Cys Ile		
525	530	535
att gtg atg att ctg acc tac aaa tat tta cag aaa ccc atg tat gaa		1683
Ile Val Met Ile Leu Thr Tyr Lys Tyr Leu Gln Lys Pro Met Tyr Glu		
540	545	550
gta cag tgg aag gtt gtt gag gag ata aat gga aac aat tat gtt tac		1731
Val Gln Trp Lys Val Val Glu Glu Ile Asn Gly Asn Asn Tyr Val Tyr		
555	560	565
ata gac cca aca caa ctt cct tat gat cac aaa tgg gag ttt ccc aga		1779
Ile Asp Pro Thr Gln Leu Pro Tyr Asp His Lys Trp Glu Phe Pro Arg		
575	580	585
aac agg ctg agt ttt ggg aaa acc ctg ggt gct gga gct ttc ggg aag		1827
Asn Arg Leu Ser Phe Gly Lys Thr Leu Gly Ala Gly Ala Phe Gly Lys		
590	595	600

## 49321-142 SEQ LIST.txt

gtt gtt gag gca act gct tat ggc tta att aag tca gat gcg gcc atg Val Val Glu Ala Thr Ala Tyr Gly Leu Ile Lys Ser Asp Ala Ala Met 605 610 615	1875
act gtc gct gta aag atg ctc aag ccg agt gcc cat ttg aca gaa ccg Thr Val Ala Val Lys Met Leu Lys Pro Ser Ala His Leu Thr Glu Arg 620 625 630	1923
gaa gcc ctc atg tct gaa ctc aaa gtc ctg agt tac ctt ggt aat cac Glu Ala Leu Met Ser Glu Leu Lys Val Leu Ser Tyr Leu Gly Asn His 635 640 645 650	1971
atg aat att gtg aat cta ctt gga gcc tgc acc att gga ggg ccc acc Met Asn Ile Val Asn Leu Leu Gly Ala Cys Thr Ile Gly Gly Pro Thr 655 660 665	2019
ctg gtc att aca gaa tat tgt tgc tat ggt gat ctt ttg aat ttt ttg Leu Val Ile Thr Glu Tyr Cys Cys Tyr Gly Asp Leu Leu Asn Phe Leu 670 675 680	2067
aga aga aaa cgt gat tca ttt att tgt tca aag cag gaa gat cat gca Arg Arg Lys Arg Asp Ser Phe Ile Cys Ser Lys Gln Glu Asp His Ala 685 690 695	2115
gaa gct gca ctt tat aag aat ctt ctg cat tca aag gag tct tcc tgc Glu Ala Ala Leu Tyr Lys Asn Leu Leu His Ser Lys Glu Ser Ser Cys 700 705 710	2163
agc gat agt act aat gag tac atg gac atg aaa cct gga gtt tct tat Ser Asp Ser Thr Asn Glu Tyr Met Asp Met Lys Pro Gly Val Ser Tyr 715 720 725 730	2211
gtt gtc cca acc aag gcc gac aaa agg aga tct gtg aga ata ggc tca Val Val Pro Thr Lys Ala Asp Lys Arg Arg Ser Val Arg Ile Gly Ser 735 740 745	2259
tac ata gaa aga gat gtg act ccc gcc atc atg gag gat gac gag ttg Tyr Ile Glu Arg Asp Val Thr Pro Ala Ile Met Glu Asp Asp Glu Leu 750 755 760	2307
gcc cta gac tta gaa gac ttg ctg agc ttt tct tac cag gtg gca aag Ala Leu Asp Leu Glu Asp Leu Leu Ser Phe Ser Tyr Gln Val Ala Lys 765 770 775	2355
ggc atg gct ttc ctc gcc tcc aag aat tgt att cac aga gac ttg gca Gly Met Ala Phe Leu Ala Ser Lys Asn Cys Ile His Arg Asp Leu Ala 780 785 790	2403
gcc aga aat atc ctc ctt act cat ggt ccg atc aca aag att tgt gat Ala Arg Asn Ile Leu Leu Thr His Gly Arg Ile Thr Lys Ile Cys Asp 795 800 805 810	2451
ttt ggt cta gcc aga gac atc aag aat gat tct aat tat gtg gtt aaa Phe Gly Leu Ala Arg Asp Ile Lys Asn Asp Ser Asn Tyr Val Val Lys 815 820 825	2499
gga aac gct cga cta cct gtg aag tgg atg gca cct gaa agc att ttc Gly Asn Ala Arg Leu Pro Val Lys Trp Met Ala Pro Glu Ser Ile Phe 830 835 840	2547

49321-142 SEQ LIST.txt

aac tgt gta tac acg ttt gaa agt gac gtc tgg tcc tat ggg att ttt Asn Cys Val Tyr Thr Phe Glu Ser Asp Val Trp Ser Tyr Gly Ile Phe 845 850 855	2595
ctt tgg gag ctg ttc tct tta gga agc agc ccc tat cct gga atg ccg Leu Trp Glu Leu Phe Ser Leu Gly Ser Ser Pro Tyr Pro Gly Met Pro 860 865 870	2643
gtc gat tct aag ttc tac aag atg atc aag gaa ggc ttc cg <sup>g</sup> atg ctc Val Asp Ser Lys Phe Tyr Lys Met Ile Lys Glu Gly Phe Arg Met Leu 875 880 885 890	2691
agc cct gaa cac gca cct gct gaa atg tat gac ata atg aag act tgc Ser Pro Glu His Ala Pro Ala Glu Met Tyr Asp Ile Met Lys Thr Cys 895 900 905	2739
tgg gat gca gat ccc cta aaa aga cca aca ttc aag caa att gtt cag Trp Asp Ala Asp Pro Leu Lys Arg Pro Thr Phe Lys Gln Ile Val Gln 910 915 920	2787
cta att gag aag cag att tca gag agc acc aat cat att tac tcc aac Leu Ile Glu Lys Gln Ile Ser Glu Ser Thr Asn His Ile Tyr Ser Asn 925 930 935	2835
tta gca aac tgc agc ccc aac cga cag aag ccc gtg gta gac cat tct Leu Ala Asn Cys Ser Pro Asn Arg Gln Lys Pro Val Val Asp His Ser 940 945 950	2883
gtg cg <sup>g</sup> atc aat tct gtc ggc agc acc gct tcc tcc tcc cag cct ctg Val Arg Ile Asn Ser Val Gly Ser Thr Ala Ser Ser Gln Pro Leu 955 960 965 970	2931
ctt gtg cac gac gat gtc tga gcagaatcag tg <sup>ttt</sup> gggtc acccctccag Leu Val His Asp Asp Val 975	2982
gaatgatctc ttctttggc ttccatgatg gttat <sup>ttt</sup> tct tttcttcaa cttgcattca	3042
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tagaacaag gacagagtat gaacacc <sup>tt</sup> gg gcttaagaaa tcttagtattt catgctggga	3462
atgagacata ggccatgaaa aaaatgatcc ccaagtgtga acaaaagatg ctcttctgtg	3522
gaccactgca tgagctttta tactaccgac ctgg <sup>ttt</sup> ta aatagagttt gctattagag	3582
cattgaattg gagagaaggc ctccctagcc agcacttgta tatacgcatc tataaattgt	3642

49321-142 SEQ LIST.txt

ccgtgttcat acatggagg ggaaaacacc ataaggttc gtttctgtat acaaccctgg	3702
cattatgtcc actgtgtata gaagtagatt aagagccata taagttgaa ggaaacagtt	3762
aataccattt ttaaggaaa caatataacc acaaagcaca gttgaacaa aatccctct	3822
tttagctgat gaacttattc tgttagattct gtggacaag cctatcagct tcagaatggc	3882
attgtactca atggatttga tgctgttga caaagttact gattcactgc atggctccc	3942
caggagtggg aaaacactgc catcttagtt tggattctt tgtacgagga aataaagtat	4002
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catggcagag tttgtgttt gtcttggaaag attcaggtat gttgcctta tggttcccc	4542
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gcactggagt tctatgctct cgccacccccc caaagttaac agattttggg gttktgttgt	4662
cacccaaagag attgttgttt gccatacttt gtctgaaaaa ttcccttggaa tttctattga	4722
cttcaatgat agtaagaaaa gtgggtgtta gttatagatg tcttaggtact tcaggggcac	4782
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cttcaatgat agtaagaaaa gtgggtgtta gttatagatg tcttaggtact tcaggggcac	4902
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atttttata tatacagtaa cttagtgtt aaatacataa gcggcgtaag tttaaaggat	5022
gttgggtgttc cacgtgtttt attcctgtat gttgtccaat tgttgacagt tctgaagaat	5082
tc	5084

<210> 14  
<211> 976  
<212> PRT  
<213> Homo sapiens

<400> 14

Met Arg Gly Ala Arg Gly Ala Trp Asp Phe Leu Cys Val Leu Leu Leu

## 49321-142 SEQ LIST.txt

1 5 10 15

Leu Leu Arg Val Gln Thr Gly Ser Ser Gln Pro Ser Val Ser Pro Gly  
20 25 30

Glu Pro Ser Pro Pro Ser Ile His Pro Gly Lys Ser Asp Leu Ile Val  
35 40 45

Arg Val Gly Asp Glu Ile Arg Leu Leu Cys Thr Asp Pro Gly Phe Val  
50 55 60

Lys Trp Thr Phe Glu Ile Leu Asp Glu Thr Asn Glu Asn Lys Gln Asn  
65 70 75 80

Glu Trp Ile Thr Glu Lys Ala Glu Ala Thr Asn Thr Gly Lys Tyr Thr  
85 90 95

Cys Thr Asn Lys His Gly Leu Ser Asn Ser Ile Tyr Val Phe Val Arg  
100 105 110

Asp Pro Ala Lys Leu Phe Leu Val Asp Arg Ser Leu Tyr Gly Lys Glu  
115 120 125

Asp Asn Asp Thr Leu Val Arg Cys Pro Leu Thr Asp Pro Glu Val Thr  
130 135 140

Asn Tyr Ser Leu Lys Gly Cys Gln Gly Lys Pro Leu Pro Lys Asp Leu  
145 150 155 160

Arg Phe Ile Pro Asp Pro Lys Ala Gly Ile Met Ile Lys Ser Val Lys  
165 170 175

Arg Ala Tyr His Arg Leu Cys Leu His Cys Ser Val Asp Gln Glu Gly  
180 185 190

Lys Ser Val Leu Ser Glu Lys Phe Ile Leu Lys Val Arg Pro Ala Phe  
195 200 205

Lys Ala Val Pro Val Val Ser Val Ser Lys Ala Ser Tyr Leu Leu Arg  
210 215 220

Glu Gly Glu Glu Phe Thr Val Thr Cys Thr Ile Lys Asp Val Ser Ser  
225 230 235 240

49321-142 SEQ LIST.txt

Ser Val Tyr Ser Thr Trp Lys Arg Glu Asn Ser Gln Thr Lys Leu Gln  
245 250 255

Glu Lys Tyr Asn Ser Trp His His Gly Asp Phe Asn Tyr Glu Arg Gln  
260 265 270

Ala Thr Leu Thr Ile Ser Ser Ala Arg Val Asn Asp Ser Gly Val Phe  
275 280 285

Met Cys Tyr Ala Asn Asn Thr Phe Gly Ser Ala Asn Val Thr Thr Thr  
290 295 300

Leu Glu Val Val Asp Lys Gly Phe Ile Asn Ile Phe Pro Met Ile Asn  
305 310 315 320

Thr Thr Val Phe Val Asn Asp Gly Glu Asn Val Asp Leu Ile Val Glu  
325 330 335

Tyr Glu Ala Phe Pro Lys Pro Glu His Gln Gln Trp Ile Tyr Met Asn  
340 345 350

Arg Thr Phe Thr Asp Lys Trp Glu Asp Tyr Pro Lys Ser Glu Asn Glu  
355 360 365

Ser Asn Ile Arg Tyr Val Ser Glu Leu His Leu Thr Arg Leu Lys Gly  
370 375 380

Thr Glu Gly Gly Thr Tyr Thr Phe Leu Val Ser Asn Ser Asp Val Asn  
385 390 395 400

Ala Ala Ile Ala Phe Asn Val Tyr Val Asn Thr Lys Pro Glu Ile Leu  
405 410 415

Thr Tyr Asp Arg Leu Val Asn Gly Met Leu Gln Cys Val Ala Ala Gly  
420 425 430

Phe Pro Glu Pro Thr Ile Asp Trp Tyr Phe Cys Pro Gly Thr Glu Gln  
435 440 445

Arg Cys Ser Ala Ser Val Leu Pro Val Asp Val Gln Thr Leu Asn Ser  
450 455 460

Ser Gly Pro Pro Phe Gly Lys Leu Val Val Gln Ser Ser Ile Asp Ser  
465 470 475 480

49321-142 SEQ LIST.txt

Ser Ala Phe Lys His Asn Gly Thr Val Glu Cys Lys Ala Tyr Asn Asp  
485 490 495

Val Gly Lys Thr Ser Ala Tyr Phe Asn Phe Ala Phe Lys Gly Asn Asn  
500 505 510

Lys Glu Gln Ile His Pro His Thr Leu Phe Thr Pro Leu Leu Ile Gly  
515 520 525

Phe Val Ile Val Ala Gly Met Met Cys Ile Ile Val Met Ile Leu Thr  
530 535 540

Tyr Lys Tyr Leu Gln Lys Pro Met Tyr Glu Val Gln Trp Lys Val Val  
545 550 555 560

Glu Glu Ile Asn Gly Asn Asn Tyr Val Tyr Ile Asp Pro Thr Gln Leu  
565 570 575

Pro Tyr Asp His Lys Trp Glu Phe Pro Arg Asn Arg Leu Ser Phe Gly  
580 585 590

Lys Thr Leu Gly Ala Gly Ala Phe Gly Lys Val Val Glu Ala Thr Ala  
595 600 605

Tyr Gly Leu Ile Lys Ser Asp Ala Ala Met Thr Val Ala Val Lys Met  
610 615 620

Leu Lys Pro Ser Ala His Leu Thr Glu Arg Glu Ala Leu Met Ser Glu  
625 630 635 640

Leu Lys Val Leu Ser Tyr Leu Gly Asn His Met Asn Ile Val Asn Leu  
645 650 655

Leu Gly Ala Cys Thr Ile Gly Gly Pro Thr Leu Val Ile Thr Glu Tyr  
660 665 670

Cys Cys Tyr Gly Asp Leu Leu Asn Phe Leu Arg Arg Lys Arg Asp Ser  
675 680 685

Phe Ile Cys Ser Lys Gln Glu Asp His Ala Glu Ala Ala Leu Tyr Lys  
690 695 700

Asn Leu Leu His Ser Lys Glu Ser Ser Cys Ser Asp Ser Thr Asn Glu  
705 710 715 720

49321-142 SEQ LIST.txt

Tyr Met Asp Met Lys Pro Gly Val Ser Tyr Val Val Pro Thr Lys Ala  
725 730 735

Asp Lys Arg Arg Ser Val Arg Ile Gly Ser Tyr Ile Glu Arg Asp Val  
740 745 750

Thr Pro Ala Ile Met Glu Asp Asp Glu Leu Ala Leu Asp Leu Glu Asp  
755 760 765

Leu Leu Ser Phe Ser Tyr Gln Val Ala Lys Gly Met Ala Phe Leu Ala  
770 775 780

Ser Lys Asn Cys Ile His Arg Asp Leu Ala Ala Arg Asn Ile Leu Leu  
785 790 795 800

Thr His Gly Arg Ile Thr Lys Ile Cys Asp Phe Gly Leu Ala Arg Asp  
805 810 815

Ile Lys Asn Asp Ser Asn Tyr Val Val Lys Gly Asn Ala Arg Leu Pro  
820 825 830

Val Lys Trp Met Ala Pro Glu Ser Ile Phe Asn Cys Val Tyr Thr Phe  
835 840 845

Glu Ser Asp Val Trp Ser Tyr Gly Ile Phe Leu Trp Glu Leu Phe Ser  
850 855 860

Leu Gly Ser Ser Pro Tyr Pro Gly Met Pro Val Asp Ser Lys Phe Tyr  
865 870 875 880

Lys Met Ile Lys Glu Gly Phe Arg Met Leu Ser Pro Glu His Ala Pro  
885 890 895

Ala Glu Met Tyr Asp Ile Met Lys Thr Cys Trp Asp Ala Asp Pro Leu  
900 905 910

Lys Arg Pro Thr Phe Lys Gln Ile Val Gln Leu Ile Glu Lys Gln Ile  
915 920 925

Ser Glu Ser Thr Asn His Ile Tyr Ser Asn Leu Ala Asn Cys Ser Pro  
930 935 940

Asn Arg Gln Lys Pro Val Val Asp His Ser Val Arg Ile Asn Ser Val

49321-142 SEQ LIST.txt

**945**                    **950**                    **955**                    **960**

Gly Ser Thr Ala Ser Ser Ser Gln Pro Leu Leu Val His Asp Asp Val  
965 970 975

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<212> DNA
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<400> 15  
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<210> 16
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<220>  
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<211> 25
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<213> artificial sequence
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<220>  
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49321-142 SEQ LIST.txt

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<210> 20  
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<212> DNA  
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<220>  
<223> INSR-specific PMO antisense oligonucleotide  
  
<400> 20  
gggtctcctc ggatcaggcg cg 22  
  
<210> 21  
<211> 23  
<212> DNA  
<213> artificial sequence  
  
<220>  
<223> KIT-specific PMO antisense oligonucleotide  
  
<400> 21  
cgcctctcat cgcggtagct gcg 23  
  
<210> 22  
<211> 22  
<212> DNA  
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<223> IFACTOR-specific PMO antisense oligonucleotide  
  
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<210> 23  
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<212> DNA  
<213> artificial sequence  
  
<220>  
<223> LMO2-specific PMO antisense oligonucleotide  
  
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## 49321-142 SEQ LIST.txt

&lt;213&gt; artificial sequence

&lt;220&gt;

&lt;223&gt; MFAP3-specific PMO antisense oligonucleotide

&lt;400&gt; 24

tgaataagca acaatgttagc ttcat

25

&lt;210&gt; 25

&lt;211&gt; 1946

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (274)..(1527)

&lt;400&gt; 25

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ggggaaaggg aagggtgcca cgtccgagca gccgccttga ctggggaaagg gtctgaatcc 120

cacccttggc attgcttggt ggagactgag ataccctgtgc tccgctcgcc tccttggttg 180

aagatttctc cttccctcac gtgatttgag ccccgtttt attttctgtg agccacgtcc 240

tcctcgagcg gggtaatct ggcaaaagga gtg atg cgc ttc gcc tgg acc gtg 294  
Met Arg Phe Ala Trp Thr Val  
1 5ctc ctg ctc ggg cct ttg cag ctc tgc gcg cta gtg cac tgc gcc cct 342  
Leu Leu Leu Gly Pro Leu Gln Leu Cys Ala Leu Val His Cys Ala Pro  
10 15 20ccc gcc gcc ggc caa cag cag ccc ccg cgc gag ccg ccg gct ccg 390  
Pro Ala Ala Gly Gln Gln Pro Pro Arg Glu Pro Pro Ala Ala Pro  
25 30 35ggc gcc tgg cgc cag cag atc caa tgg gag aac aac ggg cag gtg ttc 438  
Gly Ala Trp Arg Gln Gln Ile Gln Trp Glu Asn Asn Gly Gln Val Phe  
40 45 50 55agc ttg ctg agc ctg ggc tca cag tac cag cct cag cgc cgc cgg gac 486  
Ser Leu Leu Ser Leu Gly Ser Gln Tyr Gln Pro Gln Arg Arg Arg Asp  
60 65 70ccg ggc gcc gtc cct ggt gca gcc aac gcc tcc gcc cag cag ccc 534  
Pro Gly Ala Ala Val Pro Gly Ala Ala Asn Ala Ser Ala Gln Gln Pro  
75 80 85cgc act ccg atc ctg ctg atc cgc gac aac cgc acc gcc gcg gcg cga 582  
Arg Thr Pro Ile Leu Leu Ile Arg Asp Asn Arg Thr Ala Ala Ala Arg  
90 95 100acg cgg acg gcc ggc tca tct gga gtc acc gct ggc cgc ccc agg ccc 630  
Thr Arg Thr Ala Gly Ser Ser Gly Val Thr Ala Gly Arg Pro Arg Pro  
105 110 115

49321-142 SEQ LIST.txt

acc gcc cgt cac tgg ttc caa gct ggc tac tcg aca tct aga gcc cgc	678
Thr Ala Arg His Trp Phe Gln Ala Gly Tyr Ser Thr Ser Arg Ala Arg	
120 125 130 135	
gaa gct ggc gcc tcg cgc gcg gag aac cag aca gcg ccg gga gaa gtt	726
Glu Ala Gly Ala Ser Arg Ala Glu Asn Gln Thr Ala Pro Gly Glu Val	
140 145 150	
cct gcg ctc agt aac ctg cgg ccc agc cgc gtg gac ggc atg gtg	774
Pro Ala Leu Ser Asn Leu Arg Pro Pro Ser Arg Val Asp Gly Met Val	
155 160 165	
ggc gac gac cct tac aac ccc tac aag tac tct gac gac aac cct tat	822
Gly Asp Asp Pro Tyr Asn Pro Tyr Lys Tyr Ser Asp Asp Asn Pro Tyr	
170 175 180	
tac aac tac tac gat act tat gaa agg ccc aga cct ggg ggc agg tac	870
Tyr Asn Tyr Tyr Asp Thr Tyr Glu Arg Pro Arg Pro Gly Gly Arg Tyr	
185 190 195	
cgg ccc gga tac ggc act ggc tac ttc cag tac ggt ctc cca gac ctg	918
Arg Pro Gly Tyr Gly Thr Gly Tyr Phe Gln Tyr Gly Leu Pro Asp Leu	
200 205 210 215	
gtg gcc gac ccc tac tac atc cag gcg tcc acg tac gtg cag aag atg	966
Val Ala Asp Pro Tyr Tyr Ile Gln Ala Ser Thr Tyr Val Gln Lys Met	
220 225 230	
tcc atg tac aac ctg aga tgc gcg gag gaa aac tgt ctg gcc agt	1014
Ser Met Tyr Asn Leu Arg Cys Ala Ala Glu Glu Asn Cys Leu Ala Ser	
235 240 245	
aca gca tac agg gca gat gtc aga gat tat gat cac agg gtg ctg ctc	1062
Thr Ala Tyr Arg Ala Asp Val Arg Asp Tyr Asp His Arg Val Leu Leu	
250 255 260	
aga ttt ccc caa aga gtg aaa aac caa ggg aca tca gat ttc tta ccc	1110
Arg Phe Pro Gln Arg Val Lys Asn Gln Gly Thr Ser Asp Phe Leu Pro	
265 270 275	
agc cga cca aga tat tcc tgg gaa tgg cac agt tgt cat caa cat tac	1158
Ser Arg Pro Arg Tyr Ser Trp Glu Trp His Ser Cys His Gln His Tyr	
280 285 290 295	
cac agt atg gat gag ttt agc cac tat gac ctg ctt gat gcc aac acc	1206
His Ser Met Asp Glu Phe Ser His Tyr Asp Leu Leu Asp Ala Asn Thr	
300 305 310	
cag agg aga gtg gct gaa ggc cac aaa gca agt ttc tgt ctt gaa gac	1254
Gln Arg Arg Val Ala Glu Gly His Lys Ala Ser Phe Cys Leu Glu Asp	
315 320 325	
aca tcc tgt gac tat ggc tac cac agg cga ttt gca tgt act gca cac	1302
Thr Ser Cys Asp Tyr Gly Tyr His Arg Arg Phe Ala Cys Thr Ala His	
330 335 340	
aca cag gga ttg agt cct ggc tgt tat gat acc tat ggt gca gac ata	1350
Thr Gln Gly Leu Ser Pro Gly Cys Tyr Asp Thr Tyr Gly Ala Asp Ile	

## 49321-142 SEQ LIST.txt

345	350	355	
gac tgc cag tgg att gat att aca gat gta aaa cct gga aac tat atc Asp Cys Gln Trp Ile Asp Ile Thr Asp Val Lys Pro Gly Asn Tyr Ile 360	365	370	1398
cta aag gtc agt gta aac ccc agc tac ctg gtt cct gaa tct gac tat Leu Lys Val Ser Val Asn Pro Ser Tyr Leu Val Pro Glu Ser Asp Tyr 380	385	390	1446
acc aac aat gtt gtg cgc tgt gac att cgc tac aca gga cat cat gcg Thr Asn Asn Val Val Arg Cys Asp Ile Arg Tyr Thr Gly His His Ala 395	400	405	1494
tat gcc tca ggc tgc aca att tca ccg tat tag aaggcaaagc aaaactccca Tyr Ala Ser Gly Cys Thr Ile Ser Pro Tyr 410	415		1547
atggataaat cagtgcctgg tgttctgaag tggaaaaaaa tagactaact tcagtaggat			1607
ttatgtattt tgaaaaagag aacagaaaac aacaaaagaa tttttgtttg gactgtttc			1667
aataacaaag cacataactg gattttgaac gcttaagtca tcattacttg ggaaattttt			1727
aatgtttatt atttacatca ctttgtaat taacacagtg tttcaattct gtaattacat			1787
atttgactct ttcaaagaaa tccaaatttc tcatgttcct tttgaaattg tagtgcaaaa			1847
tggtcagtat tatctaaatg aatgagccaa aatgactttg aactgaaact tttctaaagt			1907
gctggaacct tagtcaaaca taataataat gggtttata			1946

<210> 26  
<211> 417  
<212> PRT  
<213> Homo sapiens

<400> 26

Met Arg Phe Ala Trp Thr Val Leu Leu Leu Gly Pro Leu Gln Leu Cys			
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Ala Leu Val His Cys Ala Pro Pro Ala Ala Gly Gln Gln Gln Pro Pro			
20	25	30	

Arg Glu Pro Pro Ala Ala Pro Gly Ala Trp Arg Gln Gln Ile Gln Trp			
35	40	45	

Glu Asn Asn Gly Gln Val Phe Ser Leu Leu Ser Leu Gly Ser Gln Tyr			
50	55	60	

Gln Pro Gln Arg Arg Arg Asp Pro Gly Ala Ala Val Pro Gly Ala Ala			
65	70	75	80

49321-142 SEQ LIST.txt

Asn Ala Ser Ala Gln Gln Pro Arg Thr Pro Ile Leu Leu Ile Arg Asp  
85 90 95

Asn Arg Thr Ala Ala Ala Arg Thr Arg Thr Ala Gly Ser Ser Gly Val  
100 105 110

Thr Ala Gly Arg Pro Arg Pro Thr Ala Arg His Trp Phe Gln Ala Gly  
115 120 125

Tyr Ser Thr Ser Arg Ala Arg Glu Ala Gly Ala Ser Arg Ala Glu Asn  
130 135 140

Gln Thr Ala Pro Gly Glu Val Pro Ala Leu Ser Asn Leu Arg Pro Pro  
145 150 155 160

Ser Arg Val Asp Gly Met Val Gly Asp Asp Pro Tyr Asn Pro Tyr Lys  
165 170 175

Tyr Ser Asp Asp Asn Pro Tyr Tyr Asn Tyr Tyr Asp Thr Tyr Glu Arg  
180 185 190

Pro Arg Pro Gly Gly Arg Tyr Arg Pro Gly Tyr Gly Thr Gly Tyr Phe  
195 200 205

Gln Tyr Gly Leu Pro Asp Leu Val Ala Asp Pro Tyr Tyr Ile Gln Ala  
210 215 220

Ser Thr Tyr Val Gln Lys Met Ser Met Tyr Asn Leu Arg Cys Ala Ala  
225 230 235 240

Glu Glu Asn Cys Leu Ala Ser Thr Ala Tyr Arg Ala Asp Val Arg Asp  
245 250 255

Tyr Asp His Arg Val Leu Leu Arg Phe Pro Gln Arg Val Lys Asn Gln  
260 265 270

Gly Thr Ser Asp Phe Leu Pro Ser Arg Pro Arg Tyr Ser Trp Glu Trp  
275 280 285

His Ser Cys His Gln His Tyr His Ser Met Asp Glu Phe Ser His Tyr  
290 295 300

Asp Leu Leu Asp Ala Asn Thr Gln Arg Arg Val Ala Glu Gly His Lys  
305 310 315 320

49321-142 SEQ LIST.txt

Ala Ser Phe Cys Leu Glu Asp Thr Ser Cys Asp Tyr Gly Tyr His Arg  
 325 330 335

Arg Phe Ala Cys Thr Ala His Thr Gln Gly Leu Ser Pro Gly Cys Tyr  
 340 345 350

Asp Thr Tyr Gly Ala Asp Ile Asp Cys Gln Trp Ile Asp Ile Thr Asp  
 355 360 365

Val Lys Pro Gly Asn Tyr Ile Leu Lys Val Ser Val Asn Pro Ser Tyr  
 370 375 380

Leu Val Pro Glu Ser Asp Tyr Thr Asn Asn Val Val Arg Cys Asp Ile  
 385 390 395 400

Arg Tyr Thr Gly His His Ala Tyr Ala Ser Gly Cys Thr Ile Ser Pro  
 405 410 415

Tyr

<210> 27  
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 <212> DNA  
 <213> Homo sapiens

<220>  
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 <222> (73) .. (1146)

<400> 27  
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gaaaggctga gc atg cag agt gtg cag agc acg agc ttt tgt ctc cga aag 111  
 Met Gln Ser Val Gln Ser Thr Phe Cys Leu Arg Lys  
 1 5 10

cag tgc ctt tgc ctg acc ttc ctg ctt ctc cat ctc ctg gga cag gtc 159  
 Gln Cys Leu Cys Leu Thr Phe Leu Leu His Leu Leu Gly Gln Val  
 15 20 25

gct gcg act cag cgc tgc cct ccc cag tgc ccg ggc cgg tgc cct gcg 207  
 Ala Ala Thr Gln Arg Cys Pro Pro Gln Cys Pro Gly Arg Cys Pro Ala  
 30 35 40 45

acg ccg ccg acc tgc gcc ccc ggg gtg cgc gcg gtg ctg gac ggc tgc 255  
 Thr Pro Pro Thr Cys Ala Pro Gly Val Arg Ala Val Leu Asp Gly Cys  
 50 55 60

## 49321-142 SEQ LIST.txt

tca tgc tgt ctg gtg tgt gcc cgc cag cgt ggc gag agc tgc tca gat Ser Cys Cys Leu Val Cys Ala Arg Gln Arg Gly Glu Ser Cys Ser Asp 65 70 75	303
ctg gag cca tgc gac gag agc agt ggc ctc tac tgt gat cgc agc gcg Leu Glu Pro Cys Asp Glu Ser Ser Gly Leu Tyr Cys Asp Arg Ser Ala 80 85 90	351
gac ccc agc aac cag act ggc atc tgc acg gcg gta gag gga gat aac Asp Pro Ser Asn Gln Thr Gly Ile Cys Thr Ala Val Glu Gly Asp Asn 95 100 105	399
tgt gtg ttc gat ggg gtc atc tac cgc agt gga gag aaa ttt cag cca Cys Val Phe Asp Gly Val Ile Tyr Arg Ser Gly Glu Lys Phe Gln Pro 110 115 120 125	447
agc tgc aaa ttc cag tgc acc tgc aga gat ggg cag att ggc tgt gtg Ser Cys Lys Phe Gln Cys Thr Cys Arg Asp Gly Gln Ile Gly Cys Val 130 135 140	495
ccc cgc tgt cag ctg gat gtg cta ctg cct gag cct aac tgc cca gct Pro Arg Cys Gln Leu Asp Val Leu Pro Glu Pro Asn Cys Pro Ala 145 150 155	543
cca aga aaa gtt gag gtg cct gga gag tgc tgt gaa aag tgg atc tgt Pro Arg Lys Val Glu Val Pro Gly Glu Cys Cys Glu Lys Trp Ile Cys 160 165 170	591
ggc cca gat gag gag gat tca ctg gga ggc ctt acc ctt gca gct tac Gly Pro Asp Glu Glu Asp Ser Leu Gly Gly Leu Thr Leu Ala Ala Tyr 175 180 185	639
agg cca gaa gcc acc cta gga gta gaa gtc tct gac tca agt gtc aac Arg Pro Glu Ala Thr Leu Gly Val Glu Val Ser Asp Ser Ser Val Asn 190 195 200 205	687
tgc att gaa cag acc aca gag tgg aca gca tgc tcc aag agc tgt ggt Cys Ile Glu Gln Thr Glu Trp Thr Ala Cys Ser Lys Ser Cys Gly 210 215 220	735
atg ggg ttc tcc acc cgg gtc acc aat agg aac cgt caa tgt gag atg Met Gly Phe Ser Thr Arg Val Thr Asn Arg Asn Arg Gln Cys Glu Met 225 230 235	783
ctg aaa cag act cgg ctc tgc atg gtg cgg ccc tgt gaa caa gag cca Leu Lys Gln Thr Arg Leu Cys Met Val Arg Pro Cys Glu Gln Glu Pro 240 245 250	831
gag cag cca aca gat aag aaa gga aaa aag tgt ctc cgc acc aag aag Glu Gln Pro Thr Asp Lys Lys Gly Lys Lys Cys Leu Arg Thr Lys Lys 255 260 265	879
tca ctc aaa gcc atc cac ctg cag ttc aag aac tgc acc agc ctg cac Ser Leu Lys Ala Ile His Leu Gln Phe Lys Asn Cys Thr Ser Leu His 270 275 280 285	927
acc tac aag ccc agg ttc tgt ggg gtc tgc agt gat ggc cgc tgc tgc Thr Tyr Lys Pro Arg Phe Cys Gly Val Cys Ser Asp Gly Arg Cys Cys 290 295 300	975

49321-142 SEQ LIST.txt

act ccc cac aat acc aaa acc atc cag gca gag ttt cag tgc tcc cca Thr Pro His Asn Thr Lys Thr Ile Gln Ala Glu Phe Gln Cys Ser Pro 305 310 315	1023
ggg caa ata gtc aag aag cca gtg atg gtc att ggg acc tgc acc tgt Gly Gln Ile Val Lys Lys Pro Val Met Val Ile Gly Thr Cys Thr Cys 320 325 330	1071
cac acc aac tgt cct aag aac aat gag gcc ttc ctc cag gag ctg gag His Thr Asn Cys Pro Lys Asn Asn Glu Ala Phe Leu Gln Glu Leu Glu 335 340 345	1119
ctg aag act acc aga ggg aaa atg taa cctatcactc aagaaggcaca Leu Lys Thr Thr Arg Gly Lys Met 350 355	1166
cctacagagc acctgttagct gctgcgccac ccaccatcaa aggaatataa gaaaagtaat gaagaatcac gatttcatcc ttgaatcta tgtatccc taatgtgatc atatgaggac ctttcatatc tgtctttat ttaacaaaaa atgtaattaa ctgtaaactt ggaatcaagg taagctcagg atatggctta ggaatgactt acttcctgt ggtttatta caaatgcaaa tttctataaa ttaagaaaaa caagtatata atttactttg tagactgtt cacattgcac tcatcatatt ttgttgca ctagtcaat tccaagaaaa tatcactgta atgagtca gaagtctaga atcatactta acatttcatt gtacaagtat tacaaccata tattgagg cattggaaag attctctatt ggctccctt ttggtaaac cagctctgaa cttccaagct ccaaatccaa ggaaacatgc agctcttcaa catgacatcc agagatgact attactttc tgttagtt tacacttagga aacgtgtgt atctacagta atgaaatgtt tactaagtgg actgggtgtca taaactttct ccatttaaga cacattgact ccttccaat agaaagaaac taaacagaaa actcccaata caaagatgac tggccctca tagccctcag acatttat attggaagct gctgaggccc ccaagtttt taattaagca gaaacagcat attagcaggg attctctcat ctaactgatg agtaaactga ggcccaaagc acttgcttac atcctctgat agctgttca aatgtgcatt ttgtgaaatt ttgagaaaaa tagagcaaaa tcaacatgac tgggtgtgag agaccacaca ttttatgaga gtttggatt attgttagaca tgcccaaaac ttatccttgg gccataatta tgaaaactca tgatcaagat atatgtgtat acatacatgt atctggtttgc tcaggctaca agttaggctg caaaattaaa tctagacatt ctttaatgc caccacacgt gttccgcttc tctctttaa agtatttata aaaatataaa ttgtacattt tgtaaaaatat tatgtttgat ttctctactt gtcataatcac taaataaaca cgattttatt gctgaaaaaaaaaaaaaaa aaa	1226 1286 1346 1406 1466 1526 1586 1646 1706 1766 1826 1886 1946 2006 2066 2126 2186 2246 2306 2366 2389

49321-142 SEQ LIST.txt

<210> 28  
<211> 357  
<212> PRT  
<213> Homo sapiens

<400> 28

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Cys Leu Thr Phe Leu Leu Leu His Leu Leu Gly Gln Val Ala Ala Thr  
20 25 30

Gln Arg Cys Pro Pro Gln Cys Pro Gly Arg Cys Pro Ala Thr Pro Pro  
35 40 45

Thr Cys Ala Pro Gly Val Arg Ala Val Leu Asp Gly Cys Ser Cys Cys  
50 55 60

Leu Val Cys Ala Arg Gln Arg Gly Glu Ser Cys Ser Asp Leu Glu Pro  
65 70 75 80

Cys Asp Glu Ser Ser Gly Leu Tyr Cys Asp Arg Ser Ala Asp Pro Ser  
85 90 95

Asn Gln Thr Gly Ile Cys Thr Ala Val Glu Gly Asp Asn Cys Val Phe  
100 105 110

Asp Gly Val Ile Tyr Arg Ser Gly Glu Lys Phe Gln Pro Ser Cys Lys  
115 120 125

Phe Gln Cys Thr Cys Arg Asp Gly Gln Ile Gly Cys Val Pro Arg Cys  
130 135 140

Gln Leu Asp Val Leu Leu Pro Glu Pro Asn Cys Pro Ala Pro Arg Lys  
145 150 155 160

Val Glu Val Pro Gly Glu Cys Cys Glu Lys Trp Ile Cys Gly Pro Asp  
165 170 175

Glu Glu Asp Ser Leu Gly Gly Leu Thr Leu Ala Ala Tyr Arg Pro Glu  
180 185 190

Ala Thr Leu Gly Val Glu Val Ser Asp Ser Ser Val Asn Cys Ile Glu  
195 200 205

49321-142 SEQ LIST.txt

Gln Thr Thr Glu Trp Thr Ala Cys Ser Lys Ser Cys Gly Met Gly Phe  
210 215 220

Ser Thr Arg Val Thr Asn Arg Asn Arg Gln Cys Glu Met Leu Lys Gln  
225 230 235 240

Thr Arg Leu Cys Met Val Arg Pro Cys Glu Gln Glu Pro Glu Gln Pro  
245 250 255

Thr Asp Lys Lys Gly Lys Lys Cys Leu Arg Thr Lys Lys Ser Leu Lys  
260 265 270

Ala Ile His Leu Gln Phe Lys Asn Cys Thr Ser Leu His Thr Tyr Lys  
275 280 285

Pro Arg Phe Cys Gly Val Cys Ser Asp Gly Arg Cys Cys Thr Pro His  
290 295 300

Asn Thr Lys Thr Ile Gln Ala Glu Phe Gln Cys Ser Pro Gly Gln Ile  
305 310 315 320

Val Lys Lys Pro Val Met Val Ile Gly Thr Cys Thr Cys His Thr Asn  
325 330 335

Cys Pro Lys Asn Asn Glu Ala Phe Leu Gln Glu Leu Glu Leu Lys Thr  
340 345 350

Thr Arg Gly Lys Met  
355

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<211> 1518  
<212> DNA  
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<220>  
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<222> (22)..(1503)

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1 5 10

ctc gga ctg ctg gct gcc atg gga gct gtt gca ggc cag gag gac ggt 99  
Leu Gly Leu Leu Ala Ala Met Gly Ala Val Ala Gly Gln Glu Asp Gly  
15 20 25

49321-142 SEQ LIST.txt

ttt gag ggc act gag gag ggc tcg cca aga gag ttc att tac cta aac Phe Glu Gly Thr Glu Glu Gly Ser Pro Arg Glu Phe Ile Tyr Leu Asn 30 35 40	147
agg tac aag cgg gcg ggc gag tcc cag gac aag tgc acc tac acc ttc Arg Tyr Lys Arg Ala Gly Glu Ser Gln Asp Lys Cys Thr Tyr Thr Phe 45 50 55	195
att gtg ccc cag cag cgg gtc acg ggt gcc atc tgc gtc aac tcc aag Ile Val Pro Gln Gln Arg Val Thr Gly Ala Ile Cys Val Asn Ser Lys 60 65 70	243
gag cct gag gtg ctt ctg gag aac cga gtg cat aag cag gag cta gag Glu Pro Glu Val Leu Leu Glu Asn Arg Val His Lys Gln Glu Leu Glu 75 80 85 90	291
ctg ctc aac aat gag ctg ctc aag cag aag cgg cag atc gag aca ctg Leu Leu Asn Asn Glu Leu Leu Lys Gln Lys Arg Gln Ile Glu Thr Leu 95 100 105	339
cag cag ctg gag gtg gac ggc ggc att gtg agc gag gtg aag ctg Gln Gln Leu Val Glu Val Asp Gly Ile Val Ser Glu Val Lys Leu 110 115 120	387
ctg cgc aag gag agc cgc aac atg aac tcg cgg gtc acg cag ctc tac Leu Arg Lys Glu Ser Arg Asn Met Asn Ser Arg Val Thr Gln Leu Tyr 125 130 135	435
atg cag ctc ctg cac gag atc atc cgc aag cgg gac aac gcg ttg gag Met Gln Leu Leu His Glu Ile Ile Arg Lys Arg Asp Asn Ala Leu Glu 140 145 150	483
ctc tcc cag ctg gag aac agg atc ctg aac cag aca gcc gac atg ctg Leu Ser Gln Leu Glu Asn Arg Ile Leu Asn Gln Thr Ala Asp Met Leu 155 160 165 170	531
cag ctg gcc agc aag tac aag gac ctg gag cac aag tac cag cac ctg Gln Leu Ala Ser Lys Tyr Lys Asp Leu Glu His Lys Tyr Gln His Leu 175 180 185	579
gcc aca ctg gcc cac aac caa tca gag atc atc gcg cag ctt gag gag Ala Thr Leu Ala His Asn Gln Ser Glu Ile Ile Ala Gln Leu Glu Glu 190 195 200	627
cac tgc cag agg gtg ccc tcg gcc agg ccc gtc ccc cag cca ccc ccc His Cys Gln Arg Val Pro Ser Ala Arg Pro Val Pro Gln Pro Pro Pro 205 210 215	675
gct gcc ccg ccc cgg gtc tac caa cca ccc acc tac aac cgc atc atc Ala Ala Pro Pro Arg Val Tyr Gln Pro Pro Thr Tyr Asn Arg Ile Ile 220 225 230	723
aac cag atc tct acc aac gag atc cag agt gac cag aac ctg aag gtg Asn Gln Ile Ser Thr Asn Glu Ile Gln Ser Asp Gln Asn Leu Lys Val 235 240 245 250	771
ctg cca ccc cct ctg ccc act atg ccc act ctc acc agc ctc cca tct Leu Pro Pro Pro Leu Pro Thr Met Pro Thr Leu Thr Ser Leu Pro Ser	819

## 49321-142 SEQ LIST.txt

255	260	265	
tcc acc gac aag ccg tcg ggc cca tgg aga gac tgc ctg cag gcc ctg Ser Thr Asp Lys Pro Ser Gly Pro Trp Arg Asp Cys Leu Gln Ala Leu 270	275	280	867
gag gat ggc cac gac acc agc tcc atc tac ctg gtg aag ccg gag aac Glu Asp Gly His Asp Thr Ser Ser Ile Tyr Leu Val Lys Pro Glu Asn 285	290	295	915
acc aac cgc ctc atg cag gtg tgg tgc gac cag aga cac gac ccc ggg Thr Asn Arg Leu Met Gln Val Trp Cys Asp Gln Arg His Asp Pro Gly 300	305	310	963
ggc tgg acc gtc atc cag aga cgc ctg gat ggc tct gtt aac ttc ttc Gly Trp Thr Val Ile Gln Arg Leu Asp Gly Ser Val Asn Phe Phe 315	320	325	1011
agg aac tgg gag acg tac aag caa ggg ttt ggg aac att gat ggc gaa Arg Asn Trp Glu Thr Tyr Lys Gln Gly Phe Gly Asn Ile Asp Gly Glu 335	340	345	1059
tac tgg ctg ggc ctg gag aac att tac tgg ctg acg aac caa ggc aac Tyr Trp Leu Gly Leu Glu Asn Ile Tyr Trp Leu Thr Asn Gln Gly Asn 350	355	360	1107
tac aaa ctc ctg gtg acc atg gag gac tgg tcc ggc cgc aaa gtc ttt Tyr Lys Leu Leu Val Thr Met Glu Asp Trp Ser Gly Arg Lys Val Phe 365	370	375	1155
gca gaa tac gcc agt ttc cgc ctg gaa cct gag agc gag tat tat aag Ala Glu Tyr Ala Ser Phe Arg Leu Glu Pro Glu Ser Glu Tyr Tyr Lys 380	385	390	1203
ctg cgg ctg ggg cgc tac cat ggc aat gcg ggt gac tcc ttt aca tgg Leu Arg Leu Gly Arg Tyr His Gly Asn Ala Gly Asp Ser Phe Thr Trp 395	400	405	1251
cac aac ggc aag cag ttc acc acc ctg gac aga gat cat gat gtc tac His Asn Gly Lys Gln Phe Thr Thr Leu Asp Arg Asp His Asp Val Tyr 415	420	425	1299
aca gga aac tgt gcc cac tac cag aag gga ggc tgg tgg tat aac gcc Thr Gly Asn Cys Ala His Tyr Gln Lys Gly Gly Trp Trp Tyr Asn Ala 430	435	440	1347
tgt gcc cac tcc aac ctc aac ggg gtc tgg tac cgc ggg ggc cat tac Cys Ala His Ser Asn Leu Asn Gly Val Trp Tyr Arg Gly Gly His Tyr 445	450	455	1395
cgg agc cgc tac cag gac gga gtc tac tgg gct gag ttc cga gga ggc Arg Ser Arg Tyr Gln Asp Gly Val Tyr Trp Ala Glu Phe Arg Gly Gly 460	465	470	1443
tct tac tca ctc aag aaa gtg gtg atg atg atc cga ccg aac ccc aac Ser Tyr Ser Leu Lys Lys Val Val Met Met Ile Arg Pro Asn Pro Asn 475	480	485	1491
acc ttc cac taa gccagctccc cctcc			1518

49321-142 SEQ LIST.txt

Thr Phe His

<210> 30  
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<212> PRT  
<213> Homo sapiens

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1 5 10 15

Met Gly Ala Val Ala Gly Gln Glu Asp Gly Phe Glu Gly Thr Glu Glu  
20 25 30

Gly Ser Pro Arg Glu Phe Ile Tyr Leu Asn Arg Tyr Lys Arg Ala Gly  
35 40 45

Glu Ser Gln Asp Lys Cys Thr Tyr Thr Phe Ile Val Pro Gln Gln Arg  
50 55 60

Val Thr Gly Ala Ile Cys Val Asn Ser Lys Glu Pro Glu Val Leu Leu  
65 70 75 80

Glu Asn Arg Val His Lys Gln Glu Leu Glu Leu Asn Asn Glu Leu  
85 90 95

Leu Lys Gln Lys Arg Gln Ile Glu Thr Leu Gln Gln Leu Val Glu Val  
100 105 110

Asp Gly Gly Ile Val Ser Glu Val Lys Leu Leu Arg Lys Glu Ser Arg  
115 120 125

Asn Met Asn Ser Arg Val Thr Gln Leu Tyr Met Gln Leu Leu His Glu  
130 135 140

Ile Ile Arg Lys Arg Asp Asn Ala Leu Glu Leu Ser Gln Leu Glu Asn  
145 150 155 160

Arg Ile Leu Asn Gln Thr Ala Asp Met Leu Gln Leu Ala Ser Lys Tyr  
165 170 175

Lys Asp Leu Glu His Lys Tyr Gln His Leu Ala Thr Leu Ala His Asn  
180 185 190

## 49321-142 SEQ LIST.txt

Gln Ser Glu Ile Ile Ala Gln Leu Glu Glu His Cys Gln Arg Val Pro  
195 200 205

Ser Ala Arg Pro Val Pro Gln Pro Pro Pro Ala Ala Pro Pro Arg Val  
210 215 220

Tyr Gln Pro Pro Thr Tyr Asn Arg Ile Ile Asn Gln Ile Ser Thr Asn  
225 230 235 240

Glu Ile Gln Ser Asp Gln Asn Leu Lys Val Leu Pro Pro Pro Leu Pro  
245 250 255

Thr Met Pro Thr Leu Thr Ser Leu Pro Ser Ser Thr Asp Lys Pro Ser  
260 265 270

Gly Pro Trp Arg Asp Cys Leu Gln Ala Leu Glu Asp Gly His Asp Thr  
275 280 285

Ser Ser Ile Tyr Leu Val Lys Pro Glu Asn Thr Asn Arg Leu Met Gln  
290 295 300

Val Trp Cys Asp Gln Arg His Asp Pro Gly Gly Trp Thr Val Ile Gln  
305 310 315 320

Arg Arg Leu Asp Gly Ser Val Asn Phe Phe Arg Asn Trp Glu Thr Tyr  
325 330 335

Lys Gln Gly Phe Gly Asn Ile Asp Gly Glu Tyr Trp Leu Gly Leu Glu  
340 345 350

Asn Ile Tyr Trp Leu Thr Asn Gln Gly Asn Tyr Lys Leu Leu Val Thr  
355 360 365

Met Glu Asp Trp Ser Gly Arg Lys Val Phe Ala Glu Tyr Ala Ser Phe  
370 375 380

Arg Leu Glu Pro Glu Ser Glu Tyr Tyr Lys Leu Arg Leu Gly Arg Tyr  
385 390 395 400

His Gly Asn Ala Gly Asp Ser Phe Thr Trp His Asn Gly Lys Gln Phe  
405 410 415

Thr Thr Leu Asp Arg Asp His Asp Val Tyr Thr Gly Asn Cys Ala His  
420 425 430

49321-142 SEQ LIST.txt

Tyr Gln Lys Gly Gly Trp Trp Tyr Asn Ala Cys Ala His Ser Asn Leu  
435 440 445

Asn Gly Val Trp Tyr Arg Gly Gly His Tyr Arg Ser Arg Tyr Gln Asp  
450 455 460

Gly Val Tyr Trp Ala Glu Phe Arg Gly Gly Ser Tyr Ser Leu Lys Lys  
465 470 475 480

Val Val Met Met Ile Arg Pro Asn Pro Asn Thr Phe His  
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